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Original Contributions.

THE APPLICATION OF THE MICROSCOPE IN PHARMACY AND THE DRUG TRADE.

An Address before the New York College of Pharmacy.

By Frederick Hoffmann, Ph. D.

I have been invited to address you this evening on the usefulness of the microscope in pharmacy and the drug trade. As so vast a subject cannot be treated in a single lecture, to any satisfactory extent, I have concluded to confine myself to the most important application of the microscope in our profession, viz., to its use in the examination of crude drugs, and to illustrate this less by a lecture than by the exhibition of specimens of a number of microscopical preparations.

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Plants, as is well known, are built up by minute elementary organs called cells; they consist of an outer transparent and colorless membrane, or wall, composed of a substance called cellulose, which envelopes the cell contents, mostly semi-liquid or liquid fluids, that contain in suspension various substances formed by the physiological processes going on in the living plant—for instance, chlorophyll, oil-drops, starch, crystals, etc. Although the cell walls have no pores which admit the circulation of the alimentary saps, yet in obedience to a physical law, the sap permeates the cell walls, and insures in this way the vital circulation and the assimilation of the nourishing fluid throughout the cellular tissue and the body of the entire plant.

In the processes of growth and accumulation the cells experience different changes and transformations; they propagate by multiplication or partition, and are not only accumulated to build up the cellular tissue, but also frequently enlarged and transformed into tubes, fibres, and vessels, forming vascular and woody tissue. The primitive as well as such modified cells and vessels continue during the vital processes to increase and to thicken the substance of their membranes by inward deposits of cellulose, either in a continuous lining or in interrupted layers around the cell walls. In the first instance the cell walls in older parts of plants become more or less substantial and harder. Such cellular or woody tissue appears, upon a cross-section, under the microscope, as a uniform, often almost solid, skeleton; in the second instance the section, especially in a longitudinal direction through the body of the plant, shows the cells or vessels with markings of different appearances, in the shape of annular or spiral rings or bands, or

of dots or apparent pores; they arise from the unequal distribution of these secondary deposits, and are portions of the cell walls which are either thinner or thicker than the rest, and which lay often apart from the cell wall, and protude when this is broken.

As the life phenomena of the plant are the sum of the physiological processes of the cells and vessels which compose it, so is the strength and substantiality of the cellulose skeleton the cause of the different degrees of cohesion and density, of tenderness and hardness, of elasticity and brittleness, which we meet in infinite variety in vegetable structures. Although all these differences of organization and construction are more or less manifest to the unaided eye, yet their minute structure becomes in a far higher degree visible when observed through the microscope.

Since, however, only transparent objects admit a distinct observation by transmitted light, only thin, flat sections of the substance or body of specimens can be submitted to microscopical examination. These cuttings may be made in different directions, either perpendicular or parallel to the axis of the plant, or parts thereof. In the first instance we obtain transverse, in the latter longitudinal (radial and tangential), sections.

Such microscopical objects are best observed when immersed in a drop of water upon a glass slide; by using glycerine or other antiseptic fluids, instead of water, such preparations may be preserved as standard objects for future reference or comparative observation; they are in that case covered with thin glass covers, the edges of which are cemented upon the slides with varnish.

In this way the specimens are mounted. They are in their natural condition, and are thus best adapted to scientific observation and study. The appearance and contour of such specimens can, however, readily be made more conspicuous by the application of dyestuffs, such as aniline dyes, tincture of fernambuc or of iodine, ammoniacal solution of carmine, oxalic acid, solution of prussian blue, etc.

The lecturer now demostrated the structure of the fruit (carpels) of the parsley family (Umbelliferæ), and exhibited upon a screen by the aid of an oxyhydrogen microscope illustrations of transverse sections of a number of fruits of that family, and explained the characteristics which furnish the criteria for discriminating these fruits from each other, and of ascertaining at once the species from which they are obtained; among them were cross-sections of the fruits of fennel, anise, caraway, parsley, water hemlock, spotted poison hemlock, etc.

The transverse sections of a number of medicinal seeds were exhibited and explained; among them seeds of almonds, flax, mustard, poppy, colchicum, nutmeg, coffee, nux vomica, etc. In several of them, as for instance with mustard, the lecturer called attention to the absence of starch granules in their cellular tissue, which fact furnishes prompt evidence of the purity of their powder from any adulteration with starchy flours.

These were followed by the seeds of the grass family, which are not only the principal supply of vegetable food for men and the domestic animals, but whose flour and starch have, to the pharmaceutist and druggist, the additional interest of being occasionally met with as adulterants of powdered drugs. The lecturer illustrated and explained the general structure of the fruit (caryopsis) of the grass family, and the special characteristics in the anatomical structure of their seeds, and in the shape and size of the starch granules of the most important cereals; beside transverse sections of all the grains most used in domestic economy, he exhibited microscopical illustrations of their flour and starch. The epidermis of most of the grains of the cereals is coated with an exceedingly thin silicious cuticle, which

protects the grain greatly against the access of air and humidity, and to which coating the fact must be attributed that unbroken grains of wheat, rye, barley, and other cereals withstand the action of the gastric juices in the processes of digestion, and that wheat grains are said to have been found in the dry air of Egyptian tombs, undecomposed, after the lapse of thousands of years.

Transverse sections of the seeds of beans, peas, and lentils were also illustrated, and microscopical specimens of their flour. These were followed by illustrations of the different starches which furnish arrowroot, as well as of those which have been found as substitutes or adulterants. The magnifying power of the stereopticon, however, was insufficient to bring out the starches with enough distinctness, and failed to disclose the nucleus or fissure, and still less the delicate concentric layers or markings which in many starches surround them, and are peculiar and characteristic to the starch granules of various plants, and which indicate the mode of their formation, and, in common with the shape and size of the granules, furnish the criteria for their distinction and derivation.

In connection with starches, the sporules of the club moss (*Lycopodium claratum*, L.) and another adulterant of the same, *Pinus* pollen, were exhibited and briefly described, and subsequently the glands of the strobiles of hops and of the capsules of kameela.

In passing to microscopical specimens of medicinal roots, woods, barks, and parts of the central axis of plants, the lecturer gave a concise and lucid exposition of the anatomical and structural organization, and of the growth of the phanerogamous plants, and of the fundamental differences, which form the principal characteristics for their division into two great classes, the inside-growers or Endogens (Monocotyledons), and the outside-growers, or Exogens (Dicotyledons). The descriptions were illustrated by transverse sections of an endogenous and exogenous stem.

Subsequently a number of medicinal roots and their substitutes and adulterants were exhibeted and explained in transverse, radial and tangential sections; among them liquorice, burdock, belladonna, seneka, dandelion, chicory, rhatany, valerian, several of the snake roots, ipecac and the root of *Phychotria emetica*, the tubers of *Aconitum napellus* and *Aconitum stoerkianum*, and Russian or Turkey rhubarb, and Chinese or East India rhubarb.

During the illustration of the microspopical specimens of the roots, the protector, and subsequently one of the lenses of the stereopticon, broke, by the continuous and intense heat of the calcium light, and in consequence the lecturer confined the further portion of his lecture to a brief statement of the subjects, which composed the remainder, and which he had prepared and arranged for illustration and description, namely: ten specimens of sarsaparilla roots, as met with in American and European commerce; specimens of a number of medicinal barks, and of a series of twenty-one cinchona barks, all in transverse, radial and tangential sections.

The lecturer then said that he had confined the subject matter of his lecture to the application of the microscope in the examination of crude drugs only, but that, in concluding, he would not pass by without referring briefly to another important use of the microscope within the sphere of the pharmaceutist, namely, to its application in urinary and similar pathological examinations, as well as in forensic investigations, and the discovery of trichinæ spiralis in animal muscular tissue, especially that of pork.

He continued: — I stated in my introductory remarks, that the microscope has added an important method of scrutiny and research, and thereby greatly extended our knowledge of crude drugs, and that it is destined to

have an increased usefulness in pharmacy, and still more in the drug trade. I trust that these few illustrations, however inadequate my explanations have been, have sustained the truth of that assertion, and that they have demonstrated to you the nature and the value of microscopical investigation, and at the same time the fact, that this instrument, which has so largely contributed to the extent of human knowledge, and to a fairer conception of the constitution of the organic world, has lost to the pharmaceutist and the druggist the mere capacity of occassional usefulness and interest, and that in the examination of drugs and many articles of commerce and domestic economy, it is an indespensable implement, and is second in importance only to the test-tube, the burette, and the balance.

I hope these illustrations may tend to secure a greater appreciation of the value and usefulness of microscopical examinations, and to invite your interest to a closer study of the most interesting branch of the materia medica, to pharmacognosy, which now is the fundamental science of the druggist. The time is not far off, when the more general application of the microscope in the service of pharmacognosy, will place the principles and methods of the wholesale drug trade of our country upon a more scientific basis, and raise it beyond the level of a mere empiric business of routine. In consideration of this fact, it is, therefore, with a sense of appreciation and good will that I avail myself of this opportunity to urge, upon druggists in particular, a practical application of the subject-matter of my lecture. Notwithstanding all its commercial interests and relations, the wholesale drug-trade participates also largely in the results of science, and has derived during the last decades a beneficial impulse from the progress and the achievements of chemistry and the microscope. It cannot have a better guide in the problems which it has constantly to meet in the contingencies and fluctuations of commerce and industrial competition. Moreover, as the resources of knowledge widen, and facilitate the means of deception and imposition of every kind, they afford, on the other hand, the certain safeguard to protect the purity and the character of the drug market, and to secure and maintain its high standard.

It is therefore a growing necessity of our time that the drug trade should more and more raise the requirements and the range of its pursuit, and embrace and utilize the resources and the power which science abundantly offers. Even those who feel but little interest for science, and encounter it with the commonplace questions, "Of what good is it?" "Does it pay?" cannot but admit that scientific attainments are a profitable investment nowadays.

The tendency of our time is largely in favour of science and knowledge, as the most rational foundation for all pursuits of human labor and enterprise. They will in our calling likewise maintain their undisputed prerogative, as the certain guide to ascendency and victory over empiricism.

LACTOPEPTINE.

By J. L. Cutler, M. D., Bolivar, N. Y.

Some months since, having been informed of the successful treatment of dyspepsia by a new remedial agent, called "Lactopeptine," and having on my hands at the time two very severe cases of that disease, one of which I had been treating with the usual remedies, blue pills, bismuth, pepsine, etc. for four months, without obtaining any improvement whatever, induced me to give it a trial.

The result of my experience with the preparation has been so extremely satisfactory, that I deem it due to the profession to make them acquainted with the history of the above cases.

CASE 1. Mrs. McD. had suffered from dyspepsia in its worst form, for over a year; — bowels much constipated and liver very torpid. Notwithstanding the usual remedies, as above stated, had been prescribed for some months, there was no benefit obtained, in fact, the case was becoming worse; the eructations from the stomach were increasing, and the smallest quantity of the lightest food causing great distress after eating.

It was at this juncture that my attention was called to lactopeptine, with which I at once commenced treating her. Almost immediately after this treatment had been adopted, improvement began and continued. The gas eructations ceased, appetite returned; the tongue, which had been dry and red, was now moist and natural, and the palpitations of the heart, which before had been very troublesome, had ceased entirely. This condition being well established, I changed the treatment to pepsine, without her knowledge, so as to thoroughly convince myself whether lactopeptine was the immediate cause of the improvement. The day after she sent for me, a distance of eight miles, stating that the old symptoms were in part returning, and she was confident that I had altered her medicine, as the effect produced was so different.

This experiment I tried at different times with the same result, viz: being always detected, not from the taste or appearance of the powder, as they were quite similar, but solely from the effects produced. I am now giving her lactopeptine and quinine, and the case is progressing towards recovery as rapidly as one of such a severe nature could be expected. Her bowels, which before were only operated with the greatest difficulty, are now no longer constipated.

CASE 2. A year ago I treated Mr. B., aged 65, for dyspepsia. He was suffering from great distress after eating, and eructations of wind from his stomach. It took two months, with the usual remedies, before his stomach would digest ordinary food. This season he returned to me complaining of the same condition and symptoms. I gave him lactopeptine, in connection, during the first few days, with hydrargyrum cum creta. — About ten days since he met me and said he was cured, — that the medicine had assisted him from the commencemeut, and wanted to know why I had not given him the same medicine during the previous attack.

I have another case on hand, being that of a young man, who has been under treatment for dyspepsia during the last two years without receiving any benefit. I commenced at once with the lactopeptine powder, when, after a few days, improvement was manifested. As he is much emaciated, I am now giving him beef, iron and wine with lactopeptine. So far the improvement continues, and I received a letter from him yesterday, stating that he had gained three pounds in a week, and requesting me to send him more medicine. I have every confidence that a permanent cure will be effected.

Feeling convinced, that in this new preparation we have a remedial agent of great value, and one that should be widely known; and that the history of cases treated with it, would be of interest to the Profession, must be my apology for the length of this communication.

A NEW ANTISEPTIC.

Concerning the Antiseptic Properties of Salicylic Acid, by Prof. Kolbe, of Leipzig.—*Schmidt's Jahrbucher.*

Translated by J. Trush, M. D., Cincinnati.

The author starts out with the remark, that the only published observations respecting the "physiological" properties of salicylic acid, were those of Betagnini several years ago. According to this author, salicylic acid, when administered in large doses (one to one and a half drachms in two days), produces ringing in the ears; in its passage through the system, a part is decomposed and converted into salicylous acid, while another portion appears in the urine unchanged.

Certain experimental observations by Prof. Kolbe have demonstrated that the salicylic acid, if given to the amount of five grains at a dose, can be detected in the urine within two hours after administration, and continues to be present in this excretion twenty-four hours thereafter.

The known fact, that salicylic acid can be readily produced, synthetically, from carbolic acid and carbonic acid gas, and is decomposed at a boiling temperature and converted into the two compounds just named, led the author to infer that it might be possessed of properties similar to those of carbolic acid, an inference the correctness of which the following experiments would seem to substantiate.

1. To a watery solution of amygdalin a little salicylic acid was added, thoroughly mixed, and the mixture incorporated with an emulsion of sweet almonds and set aside in an open vessel, together with an other vessel containing a like mixture of amygdalin and emulsion of sweet almonds, but without the salicylic acid. After a lapse of two hours the latter emitted a strong smell of oil of bitter almonds, while the former was entirely free from this odor. Further experiments proved that the odor of the oil of bitter almonds would appear in these mixtures in the course of several hours, if the quantity of the acid added was very small, but could not be detected even after twenty-four hours when somewhat larger quantities of the acid had been employed.

2. Whenever mustard meal is mixed with warm water, the mixture in a few minutes gives off a strong smell of oil of mustard. Now the addition to such mixture of a small quantity of salicylic acid entirely prevented the development of this odor.

3. The addition of a little salicylic acid, (less than one part per thousand) to a watery solution of grape sugar, entirely prevented fermentation, the ferment evidently having been destroyed. Or, if added to a solution of grape sugar already in a state of fermentation, this process was speedily arrested.

4. Five different vessels, — glass jars — were charged, each with a quart of beer, of good quality. To four of these salicylic acid was added and in the following quantities: to No. 1, three grs.; No. 2, six grs.; No. 3, twelve grs.; and to No. 4, eighteen grs.; the fifth jar receiving no acid. The jars were then set aside, loosely covered with paper and exposed to a temperature, ranging between 68 and 75 degrees F. The beer in jar No. 5, containing no salicylic acid, commenced to spoil on the second day of exposure already, and the surface of the liquid was being covered with mold. Jar No. 1. with three grains of the acid, showed traces of this fungoid vegetation on the third day; No. 2, with six grains, on the fifth day; No. 3, with twelve grains, on the tenth day, while the quart of beer in jar

No. 4, with eighteen grs. of the acid, was entirely free from this vegetation, even after twelve days of exposure. The beer was, of course, sour, but the acid, in the proportion of about one part per thousand, had entirely prevented the development of the fungus.

5. Pure fresh cow's milk, with an admixture of 0.04 per cent of salicylic acid, was exposed in an open vessel for 36 hours to about the same temperature as above. At this time it coagulated just as milk without the acid would do. If, however the quantity of the acid was slightly augmented, the souring and coagulation was retarded considerably beyond 36 hours. Milk holding a small quantity of the acid in solution retains completely its normal taste, the little acid being altogether inappreciable to the sense of taste.

6. The author prepared some pieces of fresh meat by rubbing small quantities of the acid into the surface. Thus treated the meat remained sweet and sound for weeks, though exposed to the open air. Before using such meat the greater part of the acid can be removed by washing or rinsing off with water; that which remains after such washing or rinsing can scarcely be detected by the sense of taste; probably because the taste of the acid is not very pronounced, being of a faintly sweetish character, and not at all disagreeable. The experiments to determine the value of salicylic acid as a preservative of fresh meats for considerable periods of time, are not yet complete; should they furnish favorable results, much of the meat which at present is converted into extract might be preserved in its natural state at a very small expense. At some future time Prof. Kolbe promises to publish the results of his experiments respecting the preservation of eggs, by means of this substance.

The usefulness of salicylic acid as an antiseptic for surgical purposes has not yet been fully ascertained. Prof. Thiersch gives the following as the results of his experiments with this substance on patients in the surgical wards of the Jacobs Hospital in Leipzig: Salicylic acid, — pure or mixed with starch, — sprinkled upon ulcerating cancerous surfaces, or sloughing sores, destroys, for a considerable length of time, all offensive smell, and without giving rise to any noteworthy amount of inflammation. Solutions composed of one part of salicylic acid; three parts of phosphate of soda and 50 parts of water, applied to granulating surfaces, markedly accelerate the healing process.

A number of operations were performed under a spray of salicylic acid and water (1 part of the acid to 300 parts of water), the wounds were subsequently dressed with wadding soaked in said solution and kept moist by means of a syphon-drop, about 8 drops per minute falling upon the dressings. The results thus obtained were very satisfactory; an amputation of the thigh, performed after this method, was not followed by either pain, fever, or swelling; and the dressings, which were removed for the first time on the sixth day after amputation, were free from all offensive smell; the amputation wound, it was found, had almost entirely healed, a few small points only being still open.

Equally favorable results were obtained in a case of amputation of the arm and another case of resection of the arm. It was observed in this connection, that whenever salicylic acid was kept in contact with open wounds, it speedily appeared in the urine.

Possessed of such properties, this substance, Prof. Kolbe claims, is entitled to a place on the list of really useful articles of the materia medica, and deserving of further and even extended trial.

LECTURE ON DIPHTHERIA.

REPORTED FOR THE MEDICAL NEWS.

"It begins with a more or less decided redness of the pharynx, with swelling, generally of one, but sometimes of both tonsils. Soon afterwards there is seen on the affected part a sharply defined, whitish patch, at first formed by a layer of what looks like coagulated mucus; it is semi-transparent, grows concrete and thick, and very soon assumes a membranous consistence. This exudation, immediately after its formation, is easily detached, as it only adheres to the surface on which it rests by very slender filaments extending into the muciparous follicles." — *Trousseau.*

The disease is regarded as highly infectious and contagious. The contagion exists in the breath of the patient and also probably in other exhalations and secretions. Physicians have become affected by having shreds of the exudation coughed into their face, while engaged in cauterizing the throat of a patient. When it enters a family, all the younger members at least, are liable to contract it, and it has not unfrequently happened that even large families have had nearly all their children in succession carried off by it. Even after convalescence it is stated that a patient may infect another individual for an uncertain time.

The primary seat of the exudation may be the mucous membrane covering a tonsil, or the arches of the palate, or the posterior surface of the soft palate, the uvula, the nares, or the pharynx. "The layer of lymph may thus spread from one or from several centres." It may descend into the larynx, the trachea, and the bronchi. Dr. Stokes has reported a case, in which the tongue, tonsils, pharynx, epiglottis, larynx, trachea, and right bronchus were more or less thickly coated with the deposit, even as far as the fourth or fifth bronchial ramification. Dr. Jenner has known it to extend into the esophagus and stomach. Any raw surface from a blister or wound may become covered with the peculiar exudation during the course of the disease.

Trousseau states that the mucous membrane under the patch is perfectly healthy, or it presents no other change than an increased vascularity, and that it can be often shown, with the aid of the microscope, that on the surface of the exudation, which adhered to the mucous membrane, the epithelium remains with its cilia intact. We think, however, that in the most of cases there will be found redness and swelling, not only of the parts around about, but beneath the exudation.

The color of the exudation may be gray, white, or slightly yellowish, and its consistence may range from "cream to wash-leather" — the particles of the lymph sometimes being so thin and soft, that the term "membrane" can scarcely be applied to it; at other times it is tough, elastic and thick. "Pus, granular corpuscles, oleo-protein granules and epithelium constitute the bulk of the softer forms of the so-called lymph; while such fibres, as we see in the buffy coat of blood-coagula, constitute the bulk of the toughest variety of the lymph pellicle.

Albumen is very frequently found in the urine in diphtheria. Some say in fifty per cent of the cases, while Dr. Sanderson observed it in *all* the cases that came under his notice. Sometimes the amount of albumen is small; sometimes so great, that the urine becomes almost solid with it by nitric acid or heat. Niemeyer says, that this is due to parenchymatous degeneration of the kidneys as the direct result of the infection with diphtheritic poison, and not from excessive increase of the bodily temperature.

Various paralyses may be the result of the disease. Paralysis of the soft

palate and pharynx is the most frequent form. In the case of the former, the voice becomes nasal, and fluids enter the nose in the attempt to swallow them. In the case of the pharynx being palsied, the act of swallowing is greatly impaired, and even in some cases rendered impossible. Some of the muscles of the eye sometimes are affected. The extremities also are occasionally attacked. Niemeyer saw two cases of total paralysis of all the extremities. Fortunately almost all cases of diphtheritic paralysis recover sooner or later.

A very dangerous extension of the exudation of diphtheria is into the larynx. From this point it may spread to the trachea, and as far down, as has been stated, to the smaller divisions of the bronchial tubes. There are then present the conditions which are had in true or diphtheritic croup. The voice, which before had been unaffected, becomes changed, and a cough sets in, which is hoarse and muffled in its character. At first the cough is frequent, but after a while it becomes less so. Difficulty of breathing, which usually begins at night, follows; and there is produced at the same time a "laryngeal tracheal whistling sound" at each inspiration, which is also, but less audibly, heard at each expiration. The sound is louder during inspiration, because the lips of the glottis have then a tendency to approach each other, thus increasing the difficulty of the entrance of the air, while, on the contrary, during expiration, the lips tend to separate.

Some writers are of the opinion that diptheria and scarlatina are identical diseases — produced by the same *materies morbi.* It is certain that they sometimes prevail at the same time in the same family—some members having scarlatina, while others will be affected with all the symptoms of well marked diphtheria. Dr. Flint mentions the case of a boy who had recently had diphtheria, the false membrane in the fauces having been well marked. There had been no eruption. At the time of seeing him he was suffering from complete hemiplegia and general dropsy, and the urine contained albumen. After his convalescence, a sister was attacked with scarlatina, the rash being abundant. Most authorities, however, do not believe in the identity of the two affections. The lymphatic glands in the neighborhood of the throat, especially about the angles of the jaw, become swollen and inflamed. Such enlargement, as Dr. Aitken states, is in proportion to the severity and depth of the local, nasal, pharyngeal, laryngeal, and tracheal disease ; and when the discharges from the pharynx are fetid, and the mucous membrane sloughy, not only are the glands behind the angle of the jaw enlarged, but the connective tissue in which they are placed is the seat of effusion of serum, and even the exudation of lymph, so that very great general swelling of the parts is the result.

SYMPTOMS.—Diphtheria is usually ushered in by such *prodromata* as general *malaise*, loss of appetite, some fever, dysphagia, and glandular swelling. The symptoms are generally gradual and insidious in their onset. There is usua ly at the start more or less nervous depression, with headache, drowsiness, and sometimes diarrhea.

Sir W. Jenner divides the disease into six groups as follows: 1. *The mild form* ; 2. *The inflammatory form* ; 3. *The insidious form* ; 4. *The nasal form* ; 5. *The primary laryngeal form* ; 6. *The asthenic form.*

It is not necessary to enter into any extended description of these different groups, as their title pretty well describes them. It may simply be said that in the *mild form* the throat symptoms are slight. There is but little inflammation or exudation. The urine is not albuminous, and no sequela follow. In the *inflammatory form* the symptoms are severe. Very considerable *cynanche pharyngea* precede the exudation of lymph. There is much swelling, and the act of swallowing is very painful—sometimes impossible. In from

twelve to forty-eight hours from the commencement of the disease the deposit of the exudation takes place, and death may follow from extension of this into the larynx or trachea. The urine may contain albumen. In the *insidious form* the disease comes on suddenly. There is not much soreness of the throat, but suddenly laryngeal symptoms supervene which may lead to speedy suffocation and death. In the *nasal form*, there is at first a sanious discharge from the nostrils, with low fever. Afterwards the throat becomes red and swollen, and fluid passes through the posterior nares. The pharynx and larynx may become affected, and corresponding symptoms occur. In the *asthenic form* the symptoms are of a low type, and the patient may die from the constitutional effects of the disease. The local manifestations may be more or less severe—sometimes not being very great. The pulse, however, is described as soon becoming rapid and feeble; the sense of weakness and illness becoming extreme; the skin has a feverish pungency to the touch; the complexion assumes a dirty looking, pallid and opaque aspect; and from an early period the tongue is brown, and *sordes* form on the teeth. There is often not much deposit over the throat or larynx, and it is of the soft, pulpy kind—the local symptoms being proportionately severe. In this variety there is not unfrequently extensive ulceration and sloughing. Death tends to take place about the tenth or twelfth day of the disease.

DIAGNOSIS. Unskilled physicians are apt to call all throat affections diphtheria. The simplest cases of quinzy are not unfrequently termed it; and many thereby obtain an *eclat* for success in treating it they do not deserve. When a physician announces that he has treated one, two, or three hundred cases without losing one, or at the most not more than two or three, it can be generally relied upon that but few of them were true diphtheria. The diseases which are liable to be mistaken for it are *scarlatina*, *croup*, *herpes on the pharynx*, and extensive *thrush*. A careful examination of the throat together with the general symptoms, will generally enable us to come to a conclusion without much trouble.

TREATMENT. There is probably no disease in regard to the proper treatment of which so great a variety of opinion exists, as is the case with diphtheria. Some considering it a disease essentially of prostration, employ stimulants, as wine, brandy, beef tea, iron, quinine, etc., from the beginning to the end, without reference to indications of the pulse, heat of skin, etc. Others, looking upon the affection largely as an inflammation, treat it accordingly. Still others, under the impression that a poison is floating in the blood, which may be antidoted, administer certain medicines with that view.

Our experience has led us to believe that no specific remedy has, as yet, been discovered for the disease, and that each case should be treated according to the symptoms present in it, keeping constantly in mind that the tendency is to prostration and exhaustion, and therefore due caution should be employed in instituting any treatment that may tend to break down the vital powers.

It has been well advised that the patient should keep to his bed even in very mild cases; and that hygienic conditions should be observed, the room being kept at a uniform agreeable temperature.

"In slight attacks it is sufficient to open the bowels; give some saline mixture, with a diet of beef tea and milk; and employ soothing local remedies, viz: warm poultices or fomentations over the throat, steam inhalations, and some mild gargle."

In severe cases it is proper to make use of both general and local treatment, the first for the purpose of keeping in check the febrile symptoms when disposed to run high; and the latter for the purpose of dissolving away the

pellicles that may cover the fauces, tonsils, pharynx, etc., and modifying the diseased action in the tissues beneath.

In the first instance a purgative of castor oil or of saline medicine may be prescribed. After this, small doses of ipecacuanha with nitrate of potash, and perhaps opium or Dover's powder may be administered. In the first stages there is usually fever of greater or less severity, and such sedative medicines as ipecacuanha and nitrate of potash are very applicable. Their effects are but temporary, and can therefore bring about no permanent loss of strength—they have but a calming, moderating influence upon the fever which has a course to run, and do not debilitate. The one twenty fifth or one thirtieth of a grain of tartar emetic every couple of hours has very much the same effect, and can be used with advantage to moderate the fever. We grant that tarter emetic is one of the most powerful depressing agents of the materia medica, but when employed in the doses we have mentioned, it is only moderately sedative upon the heart's action, promotes the action of the skin, and diminishes temperature. Opium, in the form of Dover's powder, in moderate doses, allays irritation by quieting nervous excitement, and favorably affects the skin.

The use of mercurials to the extent of producing anything like their specific effects, would be highly reprehensible, but that their judicious employment at first, for the purpose of promoting secretion of the liver and alimentary canal, is beneficial, we have witnessed again and again. Says Trousseau: "Well! mercurial preparations—calomel given internally, and cutaneous frictions with Neapolitan ointment—have been tried in England, Germany, America and France, as anti-phlogistic remedies in the treatment of diphtheritic affections, pseudo-membraneous sore throat, and croup. The results, I must say, have often been successful. Without any other treatment, calomel administered at short intervals, in fractional doses, according to Dr. Law's plan, has cured a certain number of cases." He explains its effects by the supposition that "it modifies the blood, augmenting its fluidity, and so changing its state, that the secretions become less plastic." But we would not advise it to the extent of producing any constitutional effects. When we thought, after having exhibited a few doses of hydrargyrum c. creta, or a minute dose or so of calomel, we had modified the secretions, we would proceed no further with it. As Trousseau says, from the effects of mercury varying with the peculiarities of individuals in producing its specific action, there is a risk of their passing the limits within which it is wished to restrain them, and therefore it should be avoided. But if the skin, kidneys, etc., are to be acted upon, why not, too, the liver and intestinal organs, for they are most important emunctory organs? and mercury is the most reliable medicine for this purpose.

But to hurry on. A medicine which has been much vaunted in diphtheria is the *chlorate of potash*. It has been supposed by many to have specific effects. Its claims, however, in this respect, are not well founded. Beyond acting as a febrifuge, and having, as Trousseau thinks, some direct action upon the mucous membrane of the pharynx, we do not believe it possessed of other properties. Other drugs also have been mentioned as having specific properties, but without good reasons. We may mention among them, bromide of pottassium, bromine, sulphuret of potassa.

When failure of the vital powers threatens, our whole efforts should be directed to sustain the strength of the patient. For this purpose we should make free use of wine, brandy, beef-tea, carb. ammon., quinine, iron, and such food as will be easily absorbed and assimilated. One of the best tonics at this time is the muriated tincture of iron. So favorably does it sometimes act as a tonic that some have been disposed to erroneously attribute to it specific effects.

Trousseau states that he has had in many cases remarkable effects from the use of cubebs. He mentioned of a lady who had, in addition to pharyngeal diphtheria, a commencement of pseudo-membranous coryza, and who recovered from the diphtheritic symptoms in five days. He directs sixty two grains of the powder of cubebs to be taken in unleavened bread every four hours; and at the same time, that every half hour, lemon juice be applied to the throat by means of a camel's hair pencil. As a good substitute for the powdered cubebs may be used the capsules of the extract of cubebs.

Various medicaments have been employed as topical agents in the treatment of diphtheria. Aretesus made use of alum in this way, and Bretonneau had great confidence in it. Trousseau extols it highly, and mentions many cases in which its effects were singularly efficacious. He relates of an old woman, who had gained great celebrity for the cures she had performed, and whose secret remedy he himself took a great deal of trouble to ferret out. It was a solution of *alum* in vinegar and water. Alum and tannin, rubbed together, may be employed in insufflation. A condition indispensably necessary for the proper application of the powder is, that the tongue be very effectually held down during the insufflation.

The topical application of hydro-chloric acid is often most beneficial in the treatment of pseudo-membranous sore throat. "Pure fuming acid may be employed without hesitation, and cauterization with it may be repeated three or four times in the twenty-four hours."

Nitrate of silver is probably made use of topically more than any other agent; it is employed either in solution or in the solid form; when dissolved, its strength may vary from ten to sixty grains to the ounce of distilled water, and applied by means of a probang. The tongue should be well depressed by a depressor or spoonhandle carried as far back as the insertion of the tongue; and the sponge should not be too wet, lest the tongue suffer unnecessarily. We will here state, however, that Dr. Greenhow is opposed to the more severe topical remedies; but that they do in many instances act beneficially, when skillfully applied, there is no doubt. Dr. Aitkin says that the pellicle or false membrane ought never to be torn off.

"In the consecutivi paralyzis," says Dr. Aitkin, "tonics and local galvanism are the most important remedies, and the bowels should be kept open by a pill, taken morning and evening, containing from a quarter to half a grain of the extract of nux vomica, with a like quantity of sulphate of iron, combined with two or three grains of rhubarb mass. These may be varied with the administration of pills, containing one twelfth of a grain of strychnia, the strychnia being triturated with sugar of milk, and made into pills with a sufficient quantity of ext. gentian. Syrup of the phosphate of iron, in fluid drachm doses, may be given twice a day, and stimulants in the form of malt liquors are beneficial, if taken with or after meals, and the doses of iron may be taken at the same time."

If the exudative inflammation extends to the larynx, opening the trachea (tracheotomy) has frequently been had recourse to. We have no doubt patients have been saved by it, but physicians in this country resort to it with great hesitation in consequence of the little success they have had with the operation. Trousseau speaks of it in high terms; says that he has performed the operation in more than two hundred cases of diphtheria, and has the satisfaction of knowing that one fourth of the operations were sucessful. He says that at the Children's Hospital there is not an interne who fulfils a year of duty, without having opportunities of snatching from the grave several children irrevocably lost but for this judicious operative invention. He goes on to say that it is his impression, that one-half of the cases in private practice ought to recover, provided the operation is performed under conditions

in which recovery is possible. "The successful results, which are proclaimed on all sides, speak too loudly in favor of operating, as to bear down all opposition; and I do not stand alone in preaching that there is an imperative duty imposed on the practitioner of performing tracheotomy, a duty as obligatory as tying the carotid artery when that vessel has been wounded, although death quite as often as recovery follows the operation." Fatal results, no doubt, often happen after the operation in consequence of delaying it too long, and permitting the blood to become too poisoned by retention of carbonic acid gas.

NOTES ON THE USE OF THE OLEATE OF MERCURY IN SYPHILIS.

By Dr. Vajda, in Vienna. *Schmidt's Jahrbucker.*

Translated by J. TRUSH, M. D., Cincinnati, O.

The oleate of mercury, which, prepared after the method of Berkley Hill, is exceedingly expensive, may be obtained, according to Dr. Vajda, cheaply and of not inferior quality, by employing stearine oil in its preparation. The stearine oil is a cheap incidental product resulting from the manufacture of stearine candles. It is composed in great part of trioleine, contains, however, a certain amount of stearic glyceride; this latter, at low temperatures, settles to the bottom, the supernatant trioleine may be thus separated by decantation. It is the trioleine only which is employed in the preparation of the oleate of mercury. The method of obtaining the oleate is as follows: Take 28 parts, by weight, of yellow oxide of mercury, digest in 100 parts, by weight, of distilled water, then add 100 parts, by weight, of trioleine. Saponification takes place slowly at a temperature of 212° Fahrenheit, more elevated temperatures greatly accelerating the process. The oleate of mercury rises to the surface, while any decomposed oxide of mercury falls to the bottom of the vessel; the products of oxidation of fats accidentally present simultaneously undergo a still higher degree of oxidation, and are thus rendered soluble in water. The partially deoxidized oxide of mercury, and the product of combination with oleic acid must be separated mechanically, an operation which is greatly facilitated by the differences in color. The water employed in the process serves also as wash water, and contains glycerine and the product of oxidation of the oleic acid. At ordinary temperatures the oleate of mercury is about of the consistence of soft soap, of greater specific gravity than water, and neutral in its reaction.

This preparation is at present employed in the syphilitic wards of the Vienna General Hospital, and is used strictly in accordance with the rules laid down by Professor v. Sigmund in reference to mercurial inunction. So far 51 patients affected with syphilitic skin diseases have been subjected to the oleate of mercury inunction cure. From fifteen to thirty grains being rubbed in daily by each patient. In most of these cases the treatment was commenced immediately on the appearance of the eruption, without previous, or simultaneous general medication. In seven cases some form of iodine had been previously administered; in two the mercurial ointment friction cure had been commenced; and in one case iodine had been given in addition to inunction with mercurial ointment. Thirty seven of the fifty one cases were afflicted with syphilitic erythema in one or other of its several forms, and the remaining fourteen cases with papular-syphilides.

The results of treatment were as follows: In the fresh forms of the erythematous syphilides, the average number of inunctions necessary to cure, was eighteen, the eruption disappearing about the twenty-first day after the

commencement of treatment, the induration at the seat of the primary affection, as a rule, being perceptible a week longer. In those cases which had been previously subjected to a course of iodine, the eruption disappeared more rapidly; still more rapid was the cure in those cases in which mercury had been already used. Dr. Vajda, in view of these results, maintains that the oleate of mercury is a more efficient preparation than the mercurial ointment, the general effect of the remedy often showing itself with astonishing rapidity. Stomatitis, the result of the oleate of mercury friction cure, was never observed, neither did this treatment give rise to eczema, and twice only was a moderate erythema produced.

Martini, who had employed this preparation in forty cases, reported five relapses; this, however, Dr. Vajda very pertinently remarks, is due, not to any inefficiency of the remedy, but must be ascribed to the great obstinacy of the disease. Among the fifty-one cases treated by Dr. Vajda, as above set forth, three only returned subsequently with a renewed attack of the old disease, in the form of mucous patches.

The oleate of mercury penetrates the skin much more readily than the mercurial ointment; the time occupied for introducing equivalent quantities of each being as one to four. To satisfy himself that the effect corresponded with the rapidity of introduction, Dr. Vajda procured some fresh, clear lymph, and added to this a little oleate of mercury; in a short time he was able to demonstrate, in the still clear supernatant stratum of lymph, the presence of mercury, a fact which is indicative of the rapid transformation of the oleate into a soluble albuminate of mercury.

The examinations of urine from patients under this treatment, gave negative results, owing to the circumstance, Dr. Vajda claims, that the specimens of urine were collected too early in the treatment, (within the first forty-eight hours,) before the tenacious mercury albuminates could be converted into excretable compounds.

FRACTURE OF THE SKULL.

By John Hughes, M. D., Valley Junction, O.

Aug. 2nd, 1874. I was called to see Mr. Wm. Mayhony, a section boss on the Ohio and Mississippi Railroad, aged about 45 years. Some four or five hours previous he had, while intoxicated, received a severe blow on the superior portion of the os frontis, extending from the median line a little upwards and to the right about three and a half or four inches, fracturing and depressing the bone immediately over the superior portion of the longitudinal sinus; another wound on the superior part of the left temple, about two inches in length, penetrating the cranium so that I introduced a small probe about one and a half inches in depth. There was another cut behind the left ear, on the mastoid process of the temporal bone, without apparently any fracture. The patient was in a state of profound coma, pulse 55, feeble; surface of body generally cool; countenance pallid. I concluded, with the assistance and advice of Drs. Cassedy and my son, W. C. Hughes, to trephine. After dissecting back a sufficient portion of the scalp I applied the trephine, removed the disk and elevated the depressed bone, but found it so nearly detached that with my thumb and finger alone removed a portion one inch square, and another piece one inch long and half an inch wide. The patient appeared to rally some, breathed better, and the pulse, 70, became a little more full and strong, but he remained comatose for about 3 hours, probably from alcoholism. Vomited some.

Aug. 3rd, 8 o'clock, A. M. Conscious, or nearly so; pulse 70; vomits occasionally, and yawns every few minutes; converses some with difficulty; took some gruel. 5 o'clock, P. M. Much the same; pulse 70; vomits less; took some gruel and beef broth.

Aug. 4th, 6 P. M. Pulse 55, feeble; heat 98; a tendency to coma; vomits occasionally yet ate some gruel; bowels moved from enema; prescribed quinia sul. grs. ij., every four hours, and a teaspoonful of whisky and a tablespoonful cream every four or five hours.

Aug. 5th. Pulse 55, feeble; some nausea; tongue furred; took beef broth; continued same medicine as yesterday.

Aug. 6th. Pulse 59, stronger; still yawns if he talks; bowels moved by enema; some vomiting; takes beef broth; medicine same.

Aug. 7th. Pulse 55; tongue furred badly; continued cream and whisky, and beef broth.

Aug. 9th. Pulse 55; medicine same; bowels moved by enema.

Aug. 11th. Pulse 60; gave six grains of blue mass; tongue same; bowels moved.

Aug. 15. Pulse 60; gave blue pill 6 grs. followed in morning by senna and jalap; bowels moved twice.

Aug. 22nd. Patient has been for two or three days able to walk about.

Aug. 24th. Found patient much improved in every respect; wounds all healed; pulse 70, with a bright, intelligent countenance; the hair growing over the fractured point, and it pulsating like a babe's anterior fontanelle.

Remarks. The prognosis of all the physicians was that he would die; but (*as I had been cheated out of a chance, as surgeons say, of fleshing my knife before*) I thought that I would not be blamed if he did die, so in a few moments I performed a grave operation, and saved the life of my patient. The most I feared was the wound in the temple; the instrument (whatever it was) had evidently penetrated the brain an inch or more. The wounds all healed by first intention.

Selections.

INFLUENCE OF ANESTHETICS UPON THE SEXUAL IMPRESSIONS OF FEMALES.

A physician, called as an expert before a United States tribunal, made the following declaration: "A woman under the influence of anesthesia is more liable to conception than when sexual intercourse has happened by force, and I concur in the opinion of Dr. Beck, expressed in his treatise on medical jurisprudence, that women may conceive during anesthesia. The relaxation it produces facilitates conception."

This point seems to me established; but I desire to add an observation which I have made in my practice, and one that deeply concerns physicians to know. It is well known to-day that occasionally, under the influence of ether or chloroform, an excitation of the sexual organs is produced, and a feeling is excited in the mind by this sensation which may make a woman believe that she has been subjected to violence.

The first case of this nature which I witnessed myself occurred during a delivery. The woman, placed under chloroform, experienced sexual sensations so vivid that she accused me of having violated her, and called on her husband for protection. But he had been with her all the time as well as a

dozen women who had never quitted her chamber. In a second case I was administering chloroform to a woman to have a tooth extracted, but the physiognomy of the patient showed an expression of venereal excitement so pronounced that I hastened to call in her parents. On awakening she seemed astonished to see herself surrounded by her family, and clearly exhibited what her impressions had been.

On another occasion a lady of a certain age entered my office in a state of high excitement, and related that she had gone to her surgeon to have a trivial operation performed, to relieve the pain of which she had taken chloroform, and the surgeon had abused her while under its influence. I was persuaded that she had deceived herself, and, on examining all the circumstances, clearly proved to her that she had been subject to a delusion.

The moral is that physicians should never administer ether or chloroform except in the presence of witnesses.—*Reveue Medicale*, Aug. 17, 1874.

ERGOT IN THE TREATMENT OF NERVOUS DISEASES.

Dr. Daniel Kitchen, Assistant Physician to the New York State Lunatic Asylum, makes, in the July number of the *American Journal of Insanity*, an interesting report of the action of ergot in certain nervous affections. He used the fluid extract prepared by Squibb, and the aqueous extract, or ergotine, made by Merck, of Vienna. The dose of the former is from one to two drachms; the latter from six to ten grains. One drachm of the alcoholic extract of Squibb's preparation is equal to about six grains of the ergotine. He also used a few ounces of a solid extract, made by Squibb, which is about equal in strength to imported ergotine. The full physiological effect of ergot will last from one-half to three-quaters of an hour.

"There is probably no condition so annoying to the patient as headache, and certainly it is the most common. In the following forms we have used ergotine with much benefit and comfort to the patient: 1. Headache, depending on plethora or fullness of blood; 2. Headache from anæmia; 3. Headache, depending on changes in brain substance and the membranes; 4. Epileptic headaches; 5. Migraine; 6. Headache, depending on disordered menstruation. The most common form of headache is the first, or that depending on a plethoric condition of the blood vessels of the brain. Of course, we cannot estimate correctly the amount of pain endured at each sickness, but it depends largly upon the constitutional character and nervous susceptibility of the patient. In plethoric headaches the course is either very short (a few hours at most) or they last for some days. The pain is usually referable to the back of the head, and there is much throbbing of the temporal arteries. In this class of headaches we have used ergotine largely; about one hundred patients have been prescribed for, and in almost every instance relief was given in less than half an hour, and the attack thoroughly cut short.

"In headache from an anæmic condition of the brain the blood-vessels are usually lax, and as a consequence there is a slowness of the circulation. Ergotine contracts the blood-vessels, thereby giving tone to the arterial system; the blood is forced more quickly and regularly through the brain, and of course in greater quantity. Our cases of cerebral anæmia are comparatively few, and experiments are therefore limited; yet, in those cases where we have had an opportunity of using it, happy results have followed. In epileptic headaches and in epilepsy we have used ergot largely. In *petit mal* there are no twitchings, congestions of the face, suffusion of the eyes,

and a rush of blood to the head. We have in many of these cases been able to ward off the *grand mal* by large doses of ergotine. We have often combined it with conium, and it seems in this combination to work even more satisfactory than alone, which is due, we suppose, to the sedative effect of the conium. In migraine, or sick headache, we have distended blood-vessels pressing on the ophthalmic division of the fifth nerve, thereby causing the pain; and if we accept this theory, then ergotine, by contracting the blood-vessels, will relieve the headache. In headaches depending upon some disordered condition of menstruation we usually have a fullness or congestion of the cerebral vessels; sometimes, however, it may occur from anæmia of the brain. In both forms the use of ergotine is beneficial."

Dr. K. concludes his paper with the following statements: 1. Benefit of combination with bromide of potassium in epilepsy; 2. It is apt to produce cramps and pain in the stomach, which is remedied by combination with conium; 3. In nervous diseases it soothes all renal irritation and catarrh of bladder; 4. It dilates the pupil sufficiently to be noticed; 5. Increases both frequency and tension of the pulse; 6. Has no appreciable effect on the heat of the body; 7. In large doses it produces the same effect as conium, by inducing sleep; 8. Its beneficial action in delirium tremens, after bromide of potassium has failed; 9. It combines readily in form of pill with sulphate of quinine; 10. It is a cerebral sedative; 11. Ergotine possesses an advantage over the alcoholic extract in not producing any pain or cramp in the stomach, and is given in smaller quantity; 12. Ergot is not likely to be adulterated, and we always secure an appreciable effect after its administration."

THE THERAPEUTIC USES OF ACONITE.

By T. Curtis Smith, M. D., Middleport, Ohio.

This was the topic of a paper recently read before the Medical Society of London, by Dr. Brunton. He showed, that the only aconite that could be relied upon, was the *aconitum napellus*, which had been selected by Baron Antonius Stœrk as the true drug, "eam a reliquis separare quæ vera est." Dr. Brunton said, that aconite, as used in practice, had fallen imto an undeserved oblivion, and he quoted from Dr. Gerrod's Materia Medica: "It (aconite) is at the present time not very often employed, or only by a very limited number of practitioners." After detailing the history of aconite and its preparations, he said that the best and least dangerous was the tincture of the British Pharmacopœia. He brought forward this paper as an expansion of one of Dr. Fothergill's corollaries from his paper, recently read to the Society, on the "Depressants of the Circulation." He (Dr. B.) showed briefly the action of aconite in poisonous and in medical doses, that it acted as a powerful depressant and sedative to the heart and circulation, and that when death occurs it is frequently as in hemorrhage. He quoted Dr. Fleming, who stated that patients who had taken too large a dose, but recovered, felt as if dying from excessive loss of blood. Upon this power of the drug was founded the therapeutic value. When administered in medicinal doses, the general result was similar to blood-letting, but in a somewhat different way. Blood-letting weakens the force of the heart by diminishing pressure on the vessels, while aconite diminishes pressure on the vessels by weakening the force of the heart. The action of aconite was: 1. To lower the heart's action; 2. To lower the lung's action; 3. To lower the temperature

of the body; 4. To produce free transpiration; 5. To produce sleep; 6. To starve to a too vascular area. In short, aconite was our best substitute for general and local blood-letting; that it was our best agent just in those cases where formerly the lancet or leeches would have been used. He also showed that the power which had been assigned to this drug by Stœrck (in 1761), and which had since been denied, was quite correct, *i. e.*, its deobstruent power, and in support he quoted a few of many cases he had in practice, in which sole reliance was put on aconite for cure of enlarged glands; cervical, mammary, tonsillar, chronic hepatic enlargement, etc., and with complete satisfaction in result. He had notes of cases of acute disease where aconite was used, such as pulmonary congestion, chatarrhal fever, pneumonia in its early stage, laryngitis, bronchial catarrh, acute nephritis, acute general eczema, and the like; he also detailed his observations on the temperature of the body during the action of aconite, and showed how rapidly and steadily it was lowered. Details were given of local inflammation, as orchitis and inflammation of the knee-joint, treated by aconite. Its use in the early stage of eruptive fevers was mentioned, and he found it cut short attacks of parotitis, and was decidedly most beneficial in acute ophthalmia. After detailing many illustrative cases, notes of which were taken during the last five years, and calling the Society's attention to the mode of administering aconite, viz: in small and often repeated doses, from one minim to a quarter of a minim every fifteen minutes for the first hour, or two hours, according as the circumstances of the case might demand, and one minim every hour after, the action of the drug thereby was kept up, without producing poisonous symptoms. Of course the aconite was to be omitted as soon as it had done its duty, and other suitable treatment adopted. He gave the following as his conclusions after a very extensive use of the drug in private practice, extending over a period of fully five years:— 1. The best preparation is the British tincture; 2. It is best administered in oft-repeated small doses; it is nearly tasteless; 3. Its use can be continued for weeks, as it is not cumulative; 4. It is our best antiphlogistic drug; 5. It is diaphoretic and diuretic, "nec æger nec sudore debilitatus est;" 6. If it does not remove the products of inflammation when these are formed, by its control it prevents their formation, and so saves the tissue from further injury, and prevents tissue change; 7. It is most decidedly deobstruent; 8. It has the advantage, that it does not leave that excessive weakness which follows ordinarily the diaphoresis produced by other drugs, such as antimony.—*Medical and Surgical Reporter.*

ON THE HAND-FEEDING OF INFANTS.

Farinaceous foods, in general, are, as has been said, injurious to young babies, on account of the deficiency during the first months of life of the secretions necessary for the convertion of the starch into dextrine and grape-sugar—a preliminary process which is indispensable to asorption. If, however, we can make such an addition to the food as will insure the necessary chemical change, farinaceous matter ceases to be injurious. It has been found that by adding to it malt in certain proportions the same change is excited in the starch artificially as is produced naturally by the salivary and pancreatic secretions during the process of digestion. The employment of malt for this purpose was first suggested by Mialhe, in a paper, read before the French Academy in 1845, and the suggestion was put into practice by Liebig fifteen years later.

"Liebig's Food for Infants" contains wheat flour, malt, and a little carbonate of potash, and has gained a well-deserved celebrity as a food for babies during the first few months of life. The best form with which I am acquainted is that made by Mr. Mellin, under the name of "Mellin's Extract for preparing Liebig's Food for Infants." In this preparation, owing to the careful way in which it is manufactured, the whole of the starch is converted into dextrine and grape-sugar, so that the greater part of the work of digestion is performed before the food reaches the stomach of the child. Mixed with equal parts of milk and water, this food is as perfect a substitute for mothers' milk, as can be procured, and is readily digested by the youngest infants. It very rarely, indeed, happens that it is found to disagree.

In all cases then, where a child is brought up by hand, milk should enter largely into his diet, and during the first few months of his life he should be fed upon it almost entirely. If he can digest plain milk and water, there is no reason for making any other addition than that of a little milk-sugar, and cream; but in cases where, as often happens, the heavy curd taxes the gastric powers too severely, the milk may be thickened by an equal proportion of thin barley-water, or by adding to each bottleful of milk and water a teaspoonful of isinglass or of "Mellin's Extract."

Having fixed upon the kind of food which is suitable to the child, we must next be careful that it is not given in too large quantities, or that the meals are not repeated too frequently. If the stomach be kept constantly overloaded, even with a digestible diet, the effect is almost as injurious as if the child were fed upon a less digestible food in more reasonable quantities. A healthy infant passes the greater part of his time asleep, waking at intervals to take nourishment. These intervals must not be allowed to be too short, and it is a great mistake to accustom the child to take food whenever it cries. From three to four ounces of liquid will be a sufficient quantity during the first six weeks of life; and of this only a half or even a third part should consist of milk, according to the child's powers of digestion. After such a meal the infant should sleep quietly for at least two hours. Fretfulness and irritability in a very young baby almost always indicate indigestion and flatulence; and if a child cries and whines uneasily, twisting about his body and jerking his limbs, a fresh meal given instantly, although it may quiet him for the moment, will, after a short time, only increase its discomfort. During the first six weeks or two months, two hours will be a sufficient interval between the meals; afterwards this interval can be lengthened, and at the same time a larger quantity may be given at each time of feeding. No more food should be prepared at once than is required for the partscular meal. The position of the child as he takes food should be half reclining, as when he is applied to his mother's breast, and the food should be given from a feeding-bottle. When the contents of the bottle are exhausted, the child should not be allowed to continue sucking at an empty vessel, as by this means air is swallowed, which might afterwards be a source of great discomfort. The feeding apparatus must be kept perfectly clean.

The bottle should be washed out after each meal in water containing a little soda in solution, and must then lie in cold water until again wanted. It is desirable to have two bottles, which can be used alternately.

At the age of six months, farinaceous food may be given in small quantities with safety, if it be desired to do so; and in some cases the addition of a moderate proportion of wheaten flour to the diet is found to be attended with advantage. The best form in which this can be given is the preparation of wheat known as "Chapman's entire wheaten flour." This is superior for the purpose to the ordinary flour, as it contains the inner husk of

the wheat finely ground, and is therefore rich in phosphates and a peculiar body called cerealin, which has the diastatic property of changing starchy matters into dextrine. This flour should be slowly baked in an oven until it crumbles into a light greyish powder. At first no more than one teaspoonful should be given once or twice a day, rubbed up (not boiled) with milk. If there be much constipation, fine oatmeal may be used instead of the baked flour.

After the eighth month a little thin mutton or chicken broth or veal tea may be given, carefully freed from all grease. After twelve months the child may begin to take light puddings, well-mashed potatoes with gravy, or the lightly boiled yolk of an egg; but no meat should be allowed until the child be at least sixteen months old. Every new article of food should be given cautiously, and in small quantities at first, and any sign of indigestion should be noted, and a return be made at once to a simpler method of feeding.

During all this time the child should be kept scrupulously clean, and his nursery should be well ventilated and not be kept too hot. He should be washed twice a day from head to foot, once with soap. The air of his bedroom should be kept sweet and pure during the day and at night; if the weather do not allow of an open window, a lamp placed in the fender will insure of a sufficient exchange of air. The child should pass as much of his time as possible out of doors, and while every care is taken to guard his sensitive body against *sudden* changes of temperature, he must not be covered up with too heavy clothing and shut off from every breath of air for fear of his catching cold. A child ought to lie cool at night, and the furniture of his cot, although sufficiently thick to secure necessary warmth, should not be cumbersome, so as to be a burden. If the above directions are carefully carried out—and the mother should herself see that they are attended to—few cases will be found to present any difficulty in their management. Exceptional cases, however, are sometimes met with where special sources of embarassment may arise. These I propose to consider in a future paper. —*Sauitary Record.*

TRANSFUSION OF BLOOD.

An interesting experiment was performed on Friday last, in Fall River, Mass., by Dr. Julius Hoffman and Louis Weyland of this city. Hermann Dubois had suffered from consumption for five years, and had become very weak and debilitated. Physicians advised him to seek a warmer climate, but he had not sufficient strength to avail himself of this chance of relief. Dr. Hoffman had transfused blood from animals—dogs and lambs—to the human subject with success in six cases, and it was determined to make the experiment upon Mr. Dubois. Dr. Hoffman described the operation as follows:— "A healthy active lamb was taken to the room where the patient reclined. The animal was laid upon its side. An incision was made on one side of the larynx, exposing the carotid artery. When this artery was fully exposed, a ligature was tied around the vessel, shutting of completely the blood current. At a distance of about an inch and a half below the ligature, a powerfull pair of forceps was applied to the artery, compressing the vessel perfectly. Thus there was a space between the ligature and the forceps which could be opened without danger of hemorrhage. A small incision was made into the artery in this inclosed place. Then a glass tube slightly bent was inserted into the artery. A small isthmus or con-

striction had been made in the part of the glass tube inserted into the artery, which enabled the tube to be tied into the vessel. After the tube had been secured in the lamb's artery, everything was ready for work upon the patient. In Mr. Dubois' arm the vein at the bend of his elbow, connecting the basilic and cephalic veins, was exposed. A bandage was tied around below the proposed incision to prevent a flow of venous blood from the wound. After exposing the vein by an incision an inch long, forceps were placed above and below, shutting off the blood current from a space about half an inch long. The lamb's neck was then brought close to the patient's arm and the pressure of the forceps upon the lamb's artery relaxed. The blood rushed through the tube, expelling all the air. Then the opposite end was skillfully inserted into the patient's vein, and the pressure of the forceps upon the lamb's artery removed. The bright blood leaped through the tube and entered the system of the patient. The stream was kept up for one minute and forty seconds. Then the compression was removed, and the tube removed. Yesterday I heard from Mr. Dubois, and he had sufficiently recovered his strength to enable him to visit a warmer climate this coming cold weather, with good prospects of regaining his health. The lamb is alive and doing well. A lamb used in the same manner in a former experiment in this city is alive, and is now tied in a stable in an adjoining street. The human subject was so much benefitted that he spent the summer in the Catskills, and is now in Baltimore.

EMOTIONAL INSANITY.

From a Paper by E. LLOYD HOWARD, M. D.

"Dr. Carpenter says: 'It is unquestionable that many criminal actions are committed under the irrisistable dominance of some insane impulse, the individual being at the time perfectly aware of the evil nature of those actions, and of his amenableness to punishment for them.' Speaking of the two forms together, he states: 'There may, however, be no primary disorder of the intellectual faculties, and the insanity may essentially consist in a tendency to disordered *emotional* excitement, which affects the course of thought, and consequently of action, without disturbing the reasoning processes in any other way than by supplying wrong materials to them.'

"Though some medical writers refuse to admit the correctness of the definitions given, and a few even deny the proper existence of these forms of insanity, the denial, it seems to us, is based rather upon technical than practical grounds. The objection they make is, that 'insanity is not coufined *exclusively* to the emotional faculties,' contending, that 'the mind can not be properly separated into such faculties as of the intellect, the emotions, and the will; but must be considered in its entirety;' and that 'no one part may be diseased with others remaining in a perfectly healthy state.' While this may, strictly speaking, be true, yet the terms are useful as specifying forms of insanity that possess certain prominent and characteristic features; and in this sense they are permitted by all late writers. All admit that there are cases in which the intellectual faculties and the will are but slightly affected, if at all, and where the *moral preceptions* are palpably disordered; and, again, those in which criminal impulses have suddenly, and without any special premonitions, occured, and been the occasion of homicide, suicide, etc., without any notable impairment of the intellectual faculties being apparent.

"It being impossible, then, to define insanity by any 'test systems' each

case should be examined by the jury *in itself*; and they must be left free to judge of the value of *all* facts in connection with it. This seems to be the tendency of our more recent rulings; and it is the more humane, more just, and proper course; and a great advance over the older methods—better calculated to do justice to the prisoner; if not to protect the community. But we can not refrain from hazarding the opinion, that the ends of justice would be better subserved; the security of society more certain; and the rights of individuals more secure, if the laws—both statute, and those ordained by custom and sanctioned by previous rulings of the court — exempting insane offenders from punishment, were repealed; leaving the jury to determine the guilt or innocence of the prisoner, *not* on the grounds of insanity, but from *all the facts*; considering in each case, where insanity is alleged, its value, if proven, as an element in forming an opinion as to the degree and extent of punishment!

"No doubt it will seem cruel, to many, to advocate the doctrine that insane persons should *ever* be made to suffer criminal punishment! But, we must remember, the law is not to take cognizance of the sufferings of the individual, so much as of the safety of the community. This is the prime object; to be secured at all cost; and mercy can only be considered, *as subordinated to this first requirement.*

"But, is it true that punishment, or the prospect of punishment, would have no good effect as applied to insane persons? Is it not a notorious fact that constantly, both in and outside of asylums, insane patients are governed by fear, and restrained through dread of punishment? Having seen that it is not at all uncommon for cases of emotional insanity—men clearly and undoubtedly insane—to be possessed of the ability to discriminate between right and wrong, and to have sufficiently clear intellectual perceptions of the nature and penalties of crime, could not some provision be made for controlling them through fear of punishment, while, at the same time, recognizing the fact of their insanity? Both as a matter of protection to the community, and of benefit to themselves, would it not be wise to apply to many cases of 'moral' and 'impulsive' insanity, the same restraning influences we find efficacious for *sane* criminally disposed persons?

"As an epidemic mania for suicide in young women was checked by a law ordering the bodies of those so destroying themselves to be exposed, naked, to the public view; so, we believe, *murder-manias might be greatly controlled by judicious laws.*

"It is not contended that no distinction should be made between sane and insane criminals; or that each should be punished with a like severity. The only way, in our opinion, to practically reach the difficulty, is to render all criminals, whether insane or not, equally liable under the law; leaving the court and jury free to determine the kind and degree of punishment in each individual case; taking into consideration all the features of the case; investigating the facts of the isanity, as part of the facts of the case, and as *palliative* circumstances only. Confinement in a penitentiary is not a more severe punishment, in reality, than in the cells of a madhouse; but, from being commonly regarded as *punitive*, the fear of it would exercise a more wholesome restraning influence over a large class of the 'partially insane.'

"The main objects of this paper have been to expose the fallacy of the law which holds that 'the insane can not commit *crime*.' It often happens that the medical witness must testify that a criminal is *insane*, and so secure an acquittal, while his opinion, that he should nevertheless be held amenable for his actions, can not be received.

ESMARCH'S OPERATION.

I have already seen many of the surgical celebraties here, and have generally been better received by them than I expected an American stranger would be. Last night I attended, by invitation, a meeting of the Clinical Society, at which were present many of the leading London surgeons, and before whom Professor Esmarch, of Reil, read a short address upon his bloodless method of operating. This method was just being introduced in California when I left. A paper on this subject was read before the State Medical Society. The pith of Esmarch's paper was, that under the old plan he lost about one in three of amputations of the thigh; while under the bloodless plan he has had but one death in thirteen such operations. He has used it in nearly 300 cases, and in no instance has any untoward event resulted from it. The plan, in short, as he described it, is this: Apply to the limb, (it can only be used on the extremities) an india rubber roller, so tight as to force the blood from the limb towards the body. Next tie a strong tubular cord of the same material at the point which the roller reaches. This done, remove the roller and the limb is left white and bloodless. Esmarch stated that in one operation he kept the limb in this state for over two hours. The absence of blood enables you to see exactly what you are doing. The plan is being generally adopted here.

Esmarch is received with considerable *eclat* in London, so much so, that, as I am told, he is making a triumphal march among the English surgeons. He does not appear spoiled by the laurels that are showered upon him, nor is he so old, that like Cæsar, he needs to wear his chaplet to conceal calvities.

I never worked harder than I am doing here, hearing lectures and witnessing operations. Altogether I am having a good time of it. It is a delightful treat to stand back and see the hands of men known to fame do things which you have done, and to go away with a new idea for future use; though, self-praise aside, I have learned that away off yonder in our home on the sunset side of the new world, there are hands that can do things even better than I have seen them done in some instances in this metropolis, the head and the center of Anglo-Saxon culture.—*Letter from Prof. Lane to Pa. Med. and Surg. Jour.*

THE PATENT MEDICINE BUSINESS IN DANGER.

Dr. Dyrenfurth, lately appointed Principal Examiner U. S. Patent Office, has refused a patent to a medicinal combination which is simply a mixture of known medicines, and has given his reasons in full for so doing. Heretofore there has been no difficulty in obtaining patents for all such compounds. But if the decision of the new Examiner be sustained, it will throw a serious impediment in the way of flooding the country with offensive nostrums by governmental aid. Dr. Dyrenfurth presents his argument in this language:

"Such patents have, it is true, been granted, but it is not too late to stop. 1. (Having reference to this particular case and others where mixtures are called compounds.)

"Each one of a number of ingredients being used alone to attain the result which it is said a mixture of all will produce, or even separate ingredients being put into a mixture to perform separate functions, or meet separate indications within the human body, a mere mechanical assemblage

of such ingredients, there being no chemical union, is not a novel and patentable compound.

"2. There is no invention in mixing a number of drugs, all of which have been used alone to produce the result wrought.

"It may be claimed that invention is unnecessary in a composition of matter, that the spirit of the law does not require it, that inasmuch as section 24 provides that any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter, may, under certain conditions, obtain a patent therefor, the term discovery applies to compositions, *invention* to the rest. Yet, even if this be the case, and while the difference between *invention* and *discovery* may be that, under the former, a new thing is created, under the latter something already existing is found, which produces novel and unexpected effects in a line not analogous to anything to which the thing has been applied before, even if this be the case, I say, applicant has done nothing to entitle him to a patent, for he has not even made a discovery. His ingredients but perform their well-known functions. Generally, however, the term 'discovered' has no force, except when its meaning is synonymous with that of invented.

"3. To write a prescription is again not invention, nor yet a patentable discovery, but rather a matter of skill.

"The tyro in medicine is taught the effects of the various remedies, and is told that he may mix or combine certain of them. He is taught furthermore, how, under the various complications of disease, a number of drugs may be simultaneously indicated and administered. A complication, or even a single sympton, arising where the skill of the physician would point out to him that a number of drugs were necessary, his prescribing these, mixing them in *any* required proportion and exhibiting them, would be ascribable to such *skill*, but would not be *invention.*

"4. The granting of patents upon the various prescriptions is pernicious, first, because the same nostrnm cannot be taken with benefit by all persons, even for the same disease, *i. e.*, the one disease, (they are usully sold to cure a score, the absurdity of which ought to be apparent to every one) difference in diathesis requiring different remedies; such patents thus generally inure to the benefit of one (the patentee) and the misery of many; and, secondly, for the following reason: A certatn mixture of well-known drugs being indicated, the *already existing kuowledge* (his schooling) of the physician of such fact should not be trammeled by the further fact that some enterprising individual had already taken to himself a monopoly (that is a grant which restrains others from the exercise of a right or privilege which they had before the grant was made) of just this mixture, in contravention of public policy and the welfare of man.

"5. And, finally, if this or any other prescription be an invention, then the thousands of physicians throughout the world must make thousands of patentable inventions every day, an *invention* being thus, in fact, unfolded to mankind every time an original prescription is written by a competent leech.—*Pa. Med. and Surg. Jour.*

A PRACTICAL POINT IN THE OPERATION OF OVARIOTOMY.

By Dr. Atlee, Philadelphia.

Dr. Atlee calls attention to the following very important practical point in the operation of ovariotomy. It is this: immediately after making the incision through the walls of the abdomen, the index finger should be

passed up to the region of the umbilicus, and if it can be swept freely across from side to side it must be within the abdomen. — This, of course is an easy matter when no adhesions exist. It is always possible in parietal adhesions, when the finger is inside of the peritoneum. It is not possible, without the most unwarrantable violence, when the finger is between the layers of the abdominal parietes. The non-observance of this rule has led to the separation of large portions of the peritoneal layer of the walls of the abdomen, even when no adhesions existed, the operator having mistaken the peritoneum itself for an adherent cyst-wall. When, however, parietal adhesions do exist, the mistake may be more excusable and more readily made, particularly in such a case as the one just related, where the peritoneum is thickened and more strongly incorporated with the cyst-wall than with the wall of the abdomen. The most convenient and infallible test of being within the abdomen is *the ability to freely move the finger to and fro past the umbilicus.—Phila. Med. Times.*

SALTS OF LEAD IN EYE-WASHES.

It is nothing new that these salts form insoluble precipitates when exposed to the action of the secretions of the eye, and that where there is abrasion of the surface of the cornea from wounds or inflammatory process, the use of these agents may lead to the formation of opaque white patches, which disfigure the beauty of the eye, and, when they lie before the pupil, interfere with vision. Most of the modern writers on the eye refer to these lead deposits on the cornea, and some of them caution against the use of lead applications in case of corneal ulcer; yet nearly all speak of preparations of the acetate of lead, among others, to be used in a class of cases in which ulcerations are most likely to occur.

Thus Soelberg Wells, author of the standard English work on diseases of the eye, speaking of the treatment of phlyctenular ophthalmia, of acute and chronic granular ophthalmia, and of chronic granulation, recommends acetate of lead applications. On page 71 he says: "But if any infiltrations or ulcerations of the cornea exist, the acetate of lead should never be used, as it will be precipitated upon the cornea, and give rise to very marked stains." On page 77, after recommending acetate of lead, along with sulphate of copper, and nitrate of silver, in the treatment of chronic granulations, he says: "Great care must be taken never to order any preparation of the salts of lead if there is any abrasion of the epithelium of the cornea, or any ulcer of the latter, as it will produce an indelible lead stain." As if, in these diseases, ulcerations and abrasions of the surface of the cornea, though not at first presenting, were not constantly liable to occur, so that no care likely to be taken will prevent the liability to the formation of these indelible lead stains. Abrasions of the cornea are not only liable to occur in these diseases, but are easily overlooked, and may not in every case be readily detected, except by the use of a lens and oblique illumination, and in this way the danger of lead stain becomes still greater. That this danger is not merely theoretical, my own frequent experience has taught me. Nothing is more common, especially in hospital practice, than to have patients present themselves with a white patch on the cornea, which is recognized as a lead deposit—perhaps just before the pupil, abolishing all useful vision—the history of the case being that the patient, having an inflamed eye, got a prescription from a physician, very likely without any caution as to its use, or a wash from the nearest druggist, or somebody's "eye-water."

The inflammation may have passed away, but the application used to relieve it has left its mark forever. Or the patient may have used the remains of a lotion prescribed for some former trouble, in which there was no abrasion of the cornea, in some subsequent attack in which abrasion did occur, with a lead stain as a result. Or, as often happens, a patient gives to a friend, suffering from what seems to him the same trouble, the wash which has afforded relief to his own symptoms, but does that friend an irreparable injury. Another frequent and provoking experience is, that a patient with some chronic affection of the conjunctiva, though frequently told from the first of the obstinate nature of the disease, gets discouraged and disappears for a time, to return with a disfigured cornea, the result of using a lead wash obtained on a physician's prescription, or the gift of some officious friend.

I go into these details of my experience of the evil results of the use of a popular prescription, sanctioned by the authority of some of the best known writers, to show how liable such accidents are to occur, and to justify my opinion that lead applications to the eye should be wholly discarded, and the public be taught to look upon them as dangerous. Certainly there is no necessity for using this remedy, when there are so many others equally good, and their use unattended by such dangers. Williams, of Boston, is the only authority I have consulted who takes this common-sense view of the matter.—*Dr. Mathewson, Med. Record.*

Microscopy.

THE MUSCA-DOMESTICA, OR HOUSE-FLY.

A paper read before the Memphis Microscopic Society, November 19, 1874.

By L. D. Morse, M. D.

Insect life presents to the microscopist a boundless field for study and research. A field, too, which is filled with objects as interesting, as instuctive, as facinating, I may say, as any of which his instrument can take cognizance. We cannot fix upon any insect, no matter how common—the fly, the gnat, the mosquito, the flea, the moth—any of these every day pests which torture or annoy us, and set ourselves honestly to work to learn its habits and peculiarities, to familiarize ourselves with its minute anatomy without being amazed, instructed, delighted by the beauty and delicacy of its structure, the harmony and adaptability of its different organs. I have selected for our brief consideration this evening one of the most common and familiar, and I might add, one of the most widely distributed specimens of the insectivora known to the entomologist—the common house-fly. And we shall remember that whatever points of interest we may discover in our inquiries into its structure, they are taken up and varied in almost countless changes in similar or related forms of life; so that while we are examining the fly we are not only gaining knowledge of special facts, but of facts often widely general in their application. The house-fly belongs to the Diptera, or two-winged insects—the fifth great order of the Articulata. It forms one of the very numerous family of the muscidæ, and is known in scientific parlance as the *musca domestica*. It is a perfect insect, having passed through the complete metamorphosis, from the larva to pupa or chrysalis state, and then into that of the imago, in which it is

painfully familiar to us all. Whence, then, come the flies, which make themselves so much at home in our houses. Mostly from the barn-yard, the road-side, the grazing pasture, where the eggs are deposited in heaps of decaying animal and vegetable matter. There, when hatched, they pass the larva or maggot state, scavengering for the general good. The rapidity with which flies multiply will not be so much wondered at when it is known that each individual of the female lays from one hundred and eighty to two hundred eggs. Linnæus calculated that three of the *musca vomitoria*, or blow-flies, and their progeny, would make way with the carcass of an ox as quickly as it could be consumed by a lion. When the larva of the fly has reached its full development, the skin dries up and turns a brownish color; the organs of the head are retracted; it ceases active outward operations, and in this state of rest the legs, wings, head and other organs of the perfect fly are evolved. If you wish to see a most curious object, cut away carefully the end of this hardened case of the chrysalis, and examine the young fly within—the body and head a beautiful pearly white, the eyes blood-red. Once turned loose upon the world after this last metamorphosis and the perfected insect commences a life of the most active and vigorous type. It possesses an insatiable appetite, and is indefatigable in its search after food. Wherever there is anything to eat or to drink in warm weather there you are almost certain to find the fly as ubiquitous as a free-lunch grabber.

A FLY ON THE WING,

Is a most interesting and curious object. What chiefly strikes the observer's attention is the variety of directions and marvelous velocity of its movements. By fair comparison of size, what is the speed of the reindeer, clearing his mile in a minute, to that of the fly, darting through a third of that distance in the same time. The usual position in the air is with the back upward, but this is sometimes reversed, and the back is turned downward, as when starting from the wall it alights upon the ceiling. To enable it to execute these anomalies in flight the wings have a peculiar structure. They are composed of an exceedingly strong and delicate membrane, a continuation of the external integument, stretched over a framework as the silk or gingham top of an umbrella is stretched over the steel or whalebone ribs. Examined under a moderate power, the wing is seen to be covered with delicate hair and fringed at the edges with a larger growth of the same. No colors probably exceed in brilliancy the iridescent hues of the fly's wing. Observed as an opaque object, with light thrown upon it at the proper angle, and it presents a gorgeousness of prismatic coloring almost beyond description. The wing possesses a further interest, from the fact that in the young fly examined, of course alive, a species of circulation may be seen going on around the nervures or ribs, which go to make up its frame work. As the fly matures, however, the wings dry up, and if further physiological changes go on in their structure, such changes still await discovery.

HOW THE FLY WALKS UPON THE CEILING.

Many scientific men have entered into profound investigations to ascertain by what means the fly is enabled to set at defiance the law of gravitation, and walk apparently just as well back downward as in the natural position. Upon the authority of such men as Sir Joseph Banks and Sir Everard Home, the secert was announced to lie in a species of sucker or air pump, supposed to exist in each foot, and that by the alternate exhaustion and inflation of this apparatus, the fly was enabled successively to glue and then to detach each foot from the ceiling or other surface as it walked along. A simple experiment proved somewhat disastrous to this beautiful

theory. Mr. Blackwall, one of those intensely practical and experimental observers who seem to take delight in exploding all finely-wrought but too often fanciful speculations of a certain class of scientific men, put some flies into a glass receiver, exhausted the air, and saw them perambulating up and down its sides and sticking fast to its dome just the same as before the pressure was withdrawn. The same inquirer found that flies not able to stand back downward upon surfaces very highly polished were enabled to assume that position on the same surfaces when slightly soiled. Hence his conclusion is that the means by which they effect their hold is quite simple and mechanical, not differing materially from the pulvilli or fine hairs which furnish support to many other insects. This more modern idea, strangely enough, coincides almost exactly with the notions entertained two hundred years ago by a Dr. Power, author of a work on experimental philosophy. The doctor, in his forcibly direct yet quaint way, explains things as follows: "The fly is provided with six legs and walks on four. The two foremost she uses as hands wherewith to wipe her mouth and nose and take up what she eats; her other four feet are cloven and armed with little claws by which she fastens upon rugosities and asperities of all bodies like a catamount. She is also furnished with a kind of furzy substance like little sponges with which nature hath lined the soles of her feet, which substance is repleted with a white viscous liquid squeezed out at pleasure to glue herself to the surface." Such is Dr. Power's description, and a very good one it is, I may remark. The possession of "the white viscous fluid, squeezed out at pleasure," is now, however, in a great measure denied to the fly's foot. Mr. Hepworth and others suppose that the pulvilli or fine hairs with which the bottom of the foot is covered give out a secretion not particulary viscid, which aids their cohesion. One thing is certain, that the two little claws with which the foot is armed aid materially in giving the insect a firm hold upon objects which they can penetrate. Drawing a fly backward upon the hand is the same thing on a small scale as dragging a cat by the tail; the hold of the insect's claws may be easily seen and felt. The fly's foot, apart from the sole or under portion which is brought in contact with the surface of bodies in walking, is by no means the simple thing which it appears to the unaided eye. It is composed of five joints, which are furnished with a profusion of spines, spurs and bristles, presenting, even under a moderate magnifying power, a very formidable appearance.

HOW THE FLY EATS.

The proboscis or elongated tongue of the fly is an object equally interesting to the anatomist and to the microscopist. It is capable of being entirely retracted within a cavity in the lower part of the head, and of being protruded at will. It consists of a hollow, fleshy sort of tube, dilated at the end into two lobes, and capable of being flattened out beneath into a sucking disc. This disc is furnished with a pair of horny branches, which open out laterally for the purpose of keeping it expanded, and also contains two tubes with a profusion of lateral branches. These tubes seem incomplete upon their under surface and serrated at the edges. Their office has not yet been determined. My own idea — and I venture it here with the greatest diffidence — is, that only the elastic coating of the tubes is incomplete, and that by forcing air into them by means of organs in the thorax, the tenseness and resistance of the disc of the proboscis can be regulated at the will of the insect as the character of the food might require. In other words, air here is made to perform the same office which the blood executes in the erectile tissue of the vertebrate animals. The average diameter of the lateral branches of these tubes, ascertained by careful measurements conducted by

my friend Dod, is the one thousandth part of an inch. Through the proboscis the fly imbibes its food, which of necessity, must be to a certain extent liquid. If the article, upon which it feeds, be dry, as a lump of sugar, or a crumb of bread, a species of saliva is forced down through the organ, and the dissolved particles are then easily sucked up. On each side of the proboscis is a labial palpus or feeler, by means of which the insect is probably enabled to gain a more correct idea of its food and the surroundings, than it could otherwise acquire. A little above the insertion of the proboscis, and between the eyes, are the two delicate antennæ, which are thought by some naturalists to contain apparatus for hearing. If time permitted, it would be most interesting to note the wonderful changes rung upon these three organs: the proboscis, the palpi and the antennæ in different species—for in one shape or another they are common to a great number of insects.

HOW THE FLY SEES.

Take the head of a fly and with a low magnifying power examine it as an opaque object. What first strikes the observer's attention are the two eyes, prominent and rounded, one on each side of the fore part of the head. These eyes are not single, like those of vetebrate animals, but are compound —made up of thousands of little six sided eyes, massed together and immovably fixed, the whole being covered with a hard, horny substance. These little eyes are termed ocelli and their number is simply amazing, amounting in the head of the fly, by careful computation, to about four thousand. One would think our little friend well prepared to see what might be going on in his sphere of activity. Objects are, in fact, practically visible to such organs of vision from all directions without any need of turning the head. This feature of the compound eye seems to belong especially to the perfect insect; it is rarely found in the larvæ. This complexity of the fly's eye is thrown far in the shade by that of some other common insects. For instance in the two eyes of the *cabbage butterfly*, there are about seventeen thousand ocelli, in the *dragon fly* twenty four thousand, and in the *murdelia beetle* twenty five thousand. As already remarked, the compound eye is seldom found in the larvæ, never, I believe, in the larvæ of those insects, which undergo a complete metamorphosis; — it is developed at the same time that the wings are evolved. I need hardly remark, that the fly is destitute of anything like an eyelid. The little fellow literally sleeps with not only one, but with all his eyes wide open. One office of the eyelid, that of removing from the organ of vision, particles of dust, which may collect upon its surface, the fly performs very gracefully with its fore paws. Few, I imagine, have been so unobservant as not to have witnessed her at her toilet assiduously engaged in washing the face, combing the hair and polishing up the eyes preparatory to a venture in promiscuous society. The fly is furnished with a species of eye-brows, composed of large and fine hair, which, from the position of the eyes, would seem to be more for ornament, than for practical utility. The internal structure of the eye is, if possible, even more striking, than the external. Each ocellus is a perfect lens and forms its own independent image, which is mirrored upon a filament of the optic nerve. There can be no mixing of rays, and it would seem that, no matter how many of these independant eyes were obliterated, the others would still perform their functions undisturbed. It is probable, too, that the fly, spite of the multiplicity of images conveyed to the optic nerve, is cognizant of but one, just as we, having two eyes, see objects single.

HOW THE FLY BREATHES.

Insects have no lungs like the vertebrate animals, nor gills like the mol-

luscs. The blood is oxygenized by means of a complicated series of air tubes ramifying to the most delicate organs. We have already seen them in the disc of the probosis, where the smaller branches measure less than the thousandth part of an inch in diameter. In the fly these *tracheæ*, as the air tubes are called, are easily studied. The air is admitted through several breathing pores along each side of the body, and thence is distributed to the different organs, going even into the wings and legs. In the thorax is a pair of air sacks, so arranged as to promote, by their contraction or expansion, the distribution of the air. These sacks are large in those insects capable of rapid and sustained flight, small in all others. This arrangement for the aeration of the blood does away, of course, with the necessity of a heart, and the comparatively sluggish circulation of the blood, necessary for purposes of nutrition, is conducted by a number of dorsal vessels, which open into each other from behind, and are closed by valves. These vessels contracting, force the blood forward—the valves closing, and preventing a backward flow. The breathing pores, stigmata, or spiracles, as they are called, are very interesting objects in the fly. They are protected at the mouth by the interlacing of an arborescent growth, developed from the marginal integument. The numerous insect powders, so fatal to chinches, fleas, cockroaches, and other similar pests, operate in quite a mechanical way—either by stopping up at once the breathing pores, and thus suffocating its victims, or getting into the tracheæ, and producing a fatal acute bronchitis or galloping consumption.

CONCLUSION.

I come now, in conclusion, to the merest mention of what, to me, is the most interesting subject of all, namely—that of the nervous system. It is a fascinating theme, and one which brings the inquirer face to face with the deepest questions of biology. Have insects anything which corresponds to the brain and spinal marrow of man and the vertebrate animals? In other words, is our little friend, the fly, swayed by passions such as love, hate, anger, and revenge; is memory present or absent; and what of the long train of sentiments that fill the teeming brain of human kind? Has the insect none of these? Again, who shall say that insects—the fly, for instance—may not possess a sense, or senses, of which we are profoundly ignorant? These, of course, are mere questions. If the fly possess a brain, in our understanding of that organ, it is of the most primitive and rudimentary sort, hardly more than a simple commissure, formed by the junction of the optic nerves. The insect is supplied, however, with a nervous system, the counterpart of the ganglionic or great sympathetic in man and the vertebrate animals, which, for strength and endurance, almost surpasses belief. Cut off the head of a man, sever the spinal cord in the neck of a horse or an ox, and they die, we may say, instantly. Decapitate a fly, and, if the operation be skillfully done, the insect will live from twelve to twenty-four hours, perhaps longer. The power to stand erect, to walk either upright or back downward, to use the wings, all remain. I have seen a fly, twelve hours after having been deprived of its head, fly out of the box in which it had been confined, and, when replaced, proceed deliberately to clean its legs and body of the dust with which it was smutted by its fall to the floor. Every motion was as accurate, as full of purpose, as though the insect remained in full possession of the very important organs of which it had been deprived. Reflect a moment, and you will see that, by fair comparison of average age, the man, to equal the fly in endurance—in vegetative vitality, I may say—should live for a year, or longer, after losing his head, instead of dying on the instant. But the present is not the occasion to

pursue further such a theme. Another time, perhaps, it may be more fully, more profitably discussed.

On motion, the thanks of the society were tendered Dr. Morse for his able and interesting paper.

HIGH MICROSCOPIC POWERS.

By the EDITOR.

Dr. J. G. Richardson, Microscopist to the Pennsylvania Hospital, read a paper, November 2d, before the "Biological and Microscopical Section of the Academy of Natural Sciences," entitled "Notes on the Performance of Two One-Fiftieth Objectives." One of the glasses was an immersion, by Tolles, and the other a dry one, by Powell & Lealand. Whether the object of the comparison was to determine the relative merits of the work of the makers is not stated; but if it were, certainly the mode adopted was very improper. An immersion lens should be compared with an immersion, a dry one with a dry one. It is as unfair to compare a wet with a dry objective, as it is to compare an eighth with a quarter. The drop of water gives an immersion lens a larger angle of aperture and more light, besides other advantages, and it has, therefore, other things being equal, greater resolving power.

The doctor says that his skill, or unskillfulness, as a microscopist, were all constant factors, so that the superior performance seemed certainly due to the superior qualities of the higher power lens. Now, certainly, no greater fallacy could be than such a hypothesis. In unskillfulness *chance* is constantly occurring to deceive, and can not be provided against. We think we can almost say, without exaggeration, that in the majority of instances an unskillful microscopist will select the poorer of two objectives as the one *he can do the most with.* And this is not very strange when we come to consider; for the finer a lens is the more perfect must be the conditions for it to perform well, and the greater is the skill required in its management. A tyro, who is filled with admiration with the conduct of a French commercial objective that a microscopist would regard of no value whatever, would probably not be able to see anything with a fine Powell & Lealand 1-16, so perfect must be all the conditions in order for it to disclose its exquisite powers.

Dr. R., in comparing the resolving powers of the two one-fiftieths, found that the transverse striæ of surirella gemma were easily shown, but that the finer longitudinal striæ were not distinctly visible by gaslight. On our part, we never find any difficulty in bringing into view the *transverse striæ,* with any ordinarily good quarter or even half inch, and we have no trouble in showing, by lamplight, the longitudinal lines with our Powell & Lealand's 1-16, Verick's No. 10, Gundlach's German No. 7, Seibert & Krafft's 1-6, etc., etc. "Under the employment of monochromatic sunlight," the doctor goes on to say, "these faint markings, which Frey says are 'only to be mastered with much pains,' are clearly visible, even under Wales' one-twenty-fifth.' Now, we are not the owner of a Wales' one-twenty-fifth, but we are of an eighth by him, and from its performance we do not think that with a little skill in its management there would be any difficulty in the one-thirtieth mastering the longitudinal striae without the aid of monochromatic sunlight. Not only does Seibert & Krafft's one-thirtieth bring out these faint lines without the aid of the blue cell, but even their one-sixth does it with proper amplification.

In testing with the podura scales, the result of his comparative trials with central light, was that the definition of the note-of-exclamation-marks afforded by the Tolles' one-fiftieth immersion, was somewhat superior to that given by the Wales' immersion one-twenty-fifth, and the Powell & Lealand's dry one-fiftieth, although the advantage over the latter was very slight. We do not think that the doctor's judgment in this matter would have much weight with microscopists. The failure to define the longitudinal lines of the surirella gemma, with the glasses of such eminent makers as Tolles and Powell & Lealand, implies such a want of skill in manipulating very fine lenses of high power, as to render an opinion valuless in regard to any comparative merit.

In the use of the microscope in the study of pathology, Dr. Richardson has undoubtedly done a great deal of work, and, in that department, has used the instrument to advantage, as the results of his labors have shown; but, to judge from his paper, as a manipulator in "*advanced microscopy*," he has not yet attained to a very high standard. Nor do we think that his knowledge of the capacity of glasses of different powers is sufficient for him to fully appreciate the comparative merits of high and low powers. In a recent article, in the *American Journal of the Medical Sciences*, he undertook to prove that high powers, as a one-twenty-fifth and upwards, were valuable in that by their means the differences in the size of the red blood corpuscles of man and the lower animals, by the greatly increased amplification rendering their comparison easy, could be so clearly made out that there need be no difficulty in discriminating one from the other. Now, as has been pointed out in previous numbers of the MEDICAL NEWS, all the advantages of increased magnitude can be obtained by means of amplifiers, in any lens of sufficient power to bring an object into view. To be more definite—with a one-sixth, or at the most with a one-tenth, with a high angle of aperture, the utmost limits of defining power is attained, and, having reached that, it is a matter of indifference at which end of the microscopic tube amplification is made. A one-twenty-fifth, with an A eyepiece, magnifies 1,250 diameters—a one-tenth, with deeper eyepieces and other means of amplifying, can be made to magnify several thousand diameters, without material loss of sharpness of outline. Where, then, is the advantage of the latter over the former? In fact, it has been proven that the capability of the highest powers is less than those that are lower. For instance, Dr. Woodward has proven that a Powell & Lealand's one-sixteenth will show more than their one-fiftieth.

POSTAL MICRO-CABINET CLUB.

By A. F. DOD, Esq. Memphis, Tenn.

Through the kindness of Mr. Kyngdon, of Margate, I have been furnished details of the workings of the "Postal Micro-Cabinet Club," in England. It has proven eminently successful there, as a pleasant and convenient mode of communication between microscopists in isolated positions, and tends to stimulate an interest in the work which would otherwise flag. Feeling sure that such a plan would also work well in this country, if once fairly started, I am induced to give a brief synopsis of its methods and workings with our English cousins.

Qualification for membership is to have a working microscope, and some good slides. Officers consist of Secretary and President. Entrance fee, say fifty cents, and yearly dues the same for each member, to pay cost of mailing-

boxes, postage, etc. The club is divided into "Circuits," each circuit to consist of twelve members. Operations commence by the secretary sending to the first member on each circuit an empty box to hold one dozen slides. In this the receiver places one slide, (preferably of his own preparation) and forwards it to the next on his circuit, together with a small blank-book, containing his notes and queries regarding it. Next receiver adds one slide, and his notes in book, and then passes it on to the next on list, and so on to the end of the circuit. The secretary then passes it on to another circuit, and sends circuit No. 1 another empty box. When the first box has gone the entire rounds it is then started back to the first receiver, who takes back his first slide and puts in a fresh one; and so on to the end, keeping up the process *ad infinitum*. Thus each member is at no one time lying out of the use of more of his slides than there are circuits in the club; and he has, at short intervals, the opportunity of examining the work of others and exchanging ideas with fellow microscopists.

The above is a brief outline of what seems to me to be an admirable organization in the interests of microscopy. I am sure it is in every way desirable and feasible, and I, for one, would count it a privilege to belong to such a club. Who else?

MICROSCOPE OBJECTIVES—WIDE vs. LOW ANGLES.

Read before the Memphis Microscopical Society, Jan. 5th 1875.

By J. EDWARDS SMITH, Esq.

Regarding the characteristic performance of wide angled objectives as compared with those of low or moderate apertures, we all know the prevalent popular opinion, to wit, that wide angled objectives are better fitted for working with oblique light; and, conversely, that for central light, preference should be given to low angles. Dr. Carpenter, in his *Revelations of the Microscope*, endorsed strongly this doctrine, the Doctor claiming that low or moderately angled objectives, having greater working distance, were also endowed with greater penetration. Dr. Beale subsequently sustained the position assumed by Dr. Carpenter; both authors were favorably known and extensively read, and *nem. con.* the penetration doctrine became a fixed article in the microscopists' creed, and these ideas are generally believed and accepted both at home and abroad. At the time Dr. Carpenter first announced this doctrine of penetration, nearly all of the objectives then in use were of low or moderate aperture, Opticians, however, were at work, and objectives admitting more obliquity of beam had been produced—our own Spencer had succeeded in producing glasses of still wider apertures. The labor of the optician at that date seemed to be directed at wider apertures, even should the marginal rays be poorly connected; and to get these rays somehow through the glass was the problem. On the other hand, the old objectives of low angles were much better understood by the opticians, and, as a matter of course, better corrected; the result of this condition of things was simply this, the low angles, while they had not aperture to boast of, did give very fair performance with central light, and, per contrary, the wide angles, although very imperfectly corrected, did admit the oblique beam necessary to cast shadows and exhibit objects. Hence it was that Spencer astonished the world by the performance of his objectives of wide aperture, and hence our N. Spencerii and similar diatoms. Hence it was that for work with centrally disposed light, the low angles being the better instruments, did the best work; and hence, it is believed, came the doctrine of penetration, as announced by

Dr. Carpenter, endorsed by Dr. Beale, and generally accepted by the entire corps of microscopists.

Now, gentlemen, it is with some diffidence, but with no lack of firmness, that I assure you there are a few of us who have been hard workers at the tube, who do not believe this doctrine of penetration, and did not believe it ten years ago.

To my mind a good object glass, whether of low or wide aperture, should give intense definition on *one* focal plane and *one only*, any variation from this (penetration or what not) will be at a sacrifice of the intensity of the definition. The modern objectives of to-day (1874) as furnished by our countryman, Mr. Tolles, having air angles of 180°. and balsam angles of say, 85° to 95°, are instruments in every respect far removed from the objectives of ten years ago; these glasses admitting both the central and oblique pencils almost perfectly corrected, and thoroughly under the control of the eminent optician who has just introduced these new "four systems,"—hence they work equally well either by central, moderately oblique or very oblique light, and are equally serviceable for the purposes of histologist or diatomist. Now for the proof: select any object, (only be sure and not select a diatom, for Dr. Beale says that such look confused when received with low angled glasses,) suppose you take a blood corpuscle or a specimen of striated muscular fibre, or any thing you may elect, view this, using central light with the new four system Tolles' one-tenth, recently purchased by your secretary (Mr. Dod,) first with A afterward with B and other still higher eye pieces, thus carrying the amplification up to 7000 diameters or more, and note what you see. Now remove the Tolles, substitute the best low angle objective that can be obtained, repeating the previous experiment. Assuming that both objectives are manipulated so as to obtain maximum performance of each, I confidently predict that the Tolles' one-tenth will vastly excel any low angled objective extant. The view of your object, as seen with the Tolles' one-tenth, under an amplification of seven to eight thousand diameters, will be sharply defined and well illuminated, while with the low angle glass you will do well to see the object thus amplified at all.

I shall be greatly pleased to have the society try this and similar experiments, and feel sure that the results obtained will surely explode the current idea that wide angle glasses are of no use to the histologist. At a future time I shall offer further remarks, and will give in detail a few experiments of mine which perhaps some of your members will be sufficiently interested in to repeat.

NOTE:—As to the power of the low angled objectives to be used against the Tolles' new one-tenth, belonging to Mr. Dod, I make no restrictions or additions whatever; any low angled objective, be it one-fifth or a one-fiftieth, can be used for the purpose named.

MEMORANDUM OF AN EXAMINATION OF A SLIDE OF AM. PELLUCIDA AND ONE OF NAVICULA CRASSINERVIS.

[We recently sent a slide of am. pellucida, received from Queen & Co., mounted by Moller, and one of n. crassinervis, sent us by Wheeler, of London, to a friend, who has returned to us the following memorandum of examination of the two slides. It will be noticed that the latter contained a few *tough* specimens for his all-conquering 1-10.—ED.]

"The majority of the shells of am. pellucida, dry mounted, are very large, and like all of Moller's mounts, are pure and clean, the striæ on every shell

examined, yielded easily to a modern wet 1-10 and lamplight. Some of the frustules were seen with as little trouble as with an ordinary test nitzchia. This slide would prove of value to observers who have failed to recognize the transverse striæ, on this "well marked diatom."

"With the n. crassinervis, dry mounted, under a 1-6 or 1-10 immersion and lamp illumination, the easier valves give strong and comparatively coarse transverse striæ, covering the entire frustule; other valves show the same striæ, but distributed (apparently) in patches over the frustule, while other shells on the same slide do not exhibit striæ at all, but, with patient manipulation, very faint and similar markings can be observed.

"These conditions have been noticed in every *dry* slide of n. crassinervis that I have had occasion to study. An arranged group of fourteen of these shells (sent by Prof. Riner of Iowa,) exhibited, when first examined, strong transverse striæ *entirely covering all the shells*, but in less than one month the strong striæ had gradually disappeared, leaving the faint markings above referred to, which by lamp-light severely test the performance of our best modern objectives. The surface of n. crassinervis seems to be of a hard *flinty* nature, refracting light strongly. In other respects these frustules are almost identical with n. rhomboides."

TO PREPARE URINE FOR EXAMINATION FOR CASTS.

Dr. Tyson in his recent work on the urine, gives the following directions for preparing urine for examination for casts:

"The greatest caution should be exercised in examining urine for casts. They are often so sparsely present as to furnish no deposit appreciable to the naked eye, and yet may be found by careful microscopical examination. While it is not impossible for non-albuminous urine to contain casts, yet I have never met them, except perhaps in a single instance, where albumen and casts having been present, in their gradual disappearance the signs of the presence of albumen disappeared before the last casts had been washed out. On the other hand the presence of albumen means casts in the vast majority of instances, and many times I am certain they are declared absent simply because they are not carefully sought. Not a single slide should satisfy the examiner, but two or three should be carefully studied throughout their entire field. Nor is a plain slide sufficient. Urine should be examined in shallow cells, and as those of thin glass are generally too deep, the best are made with gumdammar or Bell's cement, by means of a turntable and brush, since in this way they may be obtained sufficiently shallow to allow them to be penetrated by an ordinary one-fifth or one-fourth objective. After being made they should be put away for a month or more, to thorougly dry and harden, else they are washed off with the first cleaning of the slide.

Most casts from their lightness subside slowly, and the more so because the urine is albuminous. As soon as received, therefore, the bottle of urine should be shaken up, poured into a conical glass and carefully covered. Although casts generally fall to the bottom in a shorter time, I have known twelve hours to elapse before one could be discovered, and therefore, whenever it is possible, urine should be allowed to stand for this time in a conical glass, and examined the next morning. If the urine has already been standing for some time, the supernatant fluid may be removed, and only the lower strata, containing the sediment, turned into the conical glass, and allowed further to subside. A pipette, consisting of a plain glass tube,

drawn nearly to a point, should then be carried to the bottom of the glass with the index finger pressed upon the distal end. When it has reached the bottom, the finger should be raised for a second only, and quickly returned. In this manner only the lowest drops are obtained, which are most likely to contain the casts. A drop of this fluid is allowed to fall into one of the shallow cells, covered with a thin glass cover, and carefully examined with a one-fourth or one-fifth object-glass, and the A eye-piece. Only the beginner need be cautioned against linen and cotton fibre, hair, or portions of dealwood. More likely are the mucin flakes and castlike granular aggregations of inorganic and organic matter to mislead.

SPERMATOZOIDS frequently occur in the sediment of urine of healthy individuals. When abundant they form a slight flocculent cloud, but there is generally nothing in the appearance to cause their presence to be suspected. They require a power of 400 diameters (one-fifth with the B eyepiece) to show them well, when they may be recognised by the oval head or body, and the delicate, tail-like projection emanating from it. They no longer exhibit their vibratile movement after entering the urine. Their recognition is most interesting in connection with medico-legal cases—cases of suspected rape. Their presence in vaginal mucus soon after coition and in stains upon linen, is easy of demonstration. In the former case a drop of mucus from within the vagina is placed upon a slide, a drop of water added if necessary, covered with a thin cover and examined with the microscope. In the latter a piece of the stained linen may be soaked in water or in artificial serum in a watch-glass for half an hour or an hour, and the sediment examined.

BLOOD CRYSTALS.

From the blood of man and the various vertebrated animals, including birds, one may obtain the coloring substance of the cells in a crystalline condition; the so-called blood crystals being formed. This substance has been called hæmoglobin, or hæmoto-crystalline. Many investigations have been instituted concerning these remarkable structures by Funke, Lehmann, Kunde, Teichmann, Rollett, Bojanowski, and others; Reichert having previously discovered in them a crystallized, colorless, albuminous body.

According to the general acceptation, the blood-crystals present various forms, such as prisms, tetrahedes, hexagonal tables, and rhomboids. The prismatic form is regarded as the most common, and appears in man and most of the mammalia, together with which, rhomboidal tables may also be met with. Tetrahedral (but not regular) crystals are formed by the hæmoglobin of the guineapig, and, as is generally alleged, of the mouse; rhomboidal crystals are met with in the hamster, hexagonal tables in the squirrel (and mouse?) They are to be prepared for examination according to Funke's directions: A drop of blood is to be placed on the glass slide, where it is kept in contact with the air for several minutes, a drop of water is then to be added, and the whole breathed on a few times. A covering glass is now placed over it, and evaporation allowed to take place slowly, whereby the crystallization is promoted by the action of light.

Bojanowski recommends the following procedure: Blood, as it escapes from the vein, or still better, such as is taken from the vessels of a dead animal, is to be kept in a vessel for two to four days in a cool place, whereby the coagulum begins to dissolve into a thick, fluid, dark red—to blackish mass. A drop of this fluid is to be placed on the slide, covered and exposed to the light for a few hours; the crystals may then be seen. If the

blood which is to be used for this purpose is too thick, the drop may be very suitably diluted with distilled water.

Rollett, who has also produced a very valuable work on blood crystals, makes use of a blood, the cells of which have been destroyed by freezing and remelting. The formation of crystals also readily takes place in electrified blood, and in that of the guineapig, which of all kinds of blood crystallizes the most readily; this is often so rapid as to appear "as though the crystals had been struck out with the spark." Blood from which the gases have been pumped out, is also well adapted for obtaining hæmato-crystalline. Chloroform with the access of air also causes the formation of our crystals. (Bottcher.)

Lehmann has taught us how to produce crystals of the hydrochlorate of hæmatin. They are to be obtained by treating fresh blood, or large spots of blood which are two days old, with alcohol containing oxalic acid and ether, (one part alcohol, four parts ether, and one-sixteenth of a part of oxalic acid.) Preserved in well closed bottles, the crystals are gradually precipitated from the fluid; the process is hastened by the addition of chloride of calcium which has become liquefied by exposure to the air. Where the separation takes place more rapidly, the crystals are more of the acicular form; if more slowly, either the hexagonal tables or the crystals which are represented in fig. 92. They appear to have a long and narrow laminated shape, and twisted one or two times on their long axis; they are very thin, of a brownish and brownish green translucency.

Teichmann has produced crystals of the same modification of hæmatin and called them hæmin. By proper treatment these crystals may be obtained from blood which is either fresh or decomposed by putridity, from that which is dried, and even from the oldest blood stains. Hæmin is therefore of great importance in a forensic point of view, and forms the best means of recognizing the origin from blood of a suspected stain.

For the momentary demonstration the following process is to be employed: A drop is to be rapidly dried on the slide, over the spirit lamp, and then scraped to a powder with the point of a knife. About ten to twenty drops of unhydrous acetic acid is to be added and allowed to boil a few times, the slide is then to be set aside for a few moments. A drop of blood, diluted with fifteen to twenty drops of glacial acetic acid and placed in a watch glass on the stove, also forms the crystals in question, as the fluid evaporates. They are likewise deposited when blood is mixed with an excess of concentrated acetic acid. After a few days a film, consisting of these crystals, is formed on the surface; after the removal of this a second is formed, and so on.

In order to obtain the hæmin from an old blood-stain, the stained substance is isolated and placed in a test tube, glacial acetic acid is then poured over it and boiled for a few minutes, is then filtered into a watch glass. This fluid, to which more acid is to be added, it is then exposed to evaporation in a warm place. I am indebted to the kindness of Dr. A. Schmidt, of Frankfort, for a preparation of hæmin which was obtained from a pockethandkerchief saturated with blood at Sand's execution.—*Frey.*

MEMPHIS MICROSCOPICAL SOCIETY.

Meeting of December 3d. The society met at the usual hour on the night of December 3d. Dr. J. P. Marable, and A. J. Murray, city engineer, were elected active members. Dr. J. J. Woodward, assistant surgeon United States army, in charge of the army medical museum at Washington, Dr.

W. B. Bizzell, of Mobile, and Dr. Sterling Loving, of Ohio, were elected corresponding members.

Contributions of unmounted material were received from Rev. E. C. Bowles, of Salem, Massachusetts, consisting of different vegetable fibres used in the manufacture of textile fabrics in India; also, six slides from B. F. Quimby, of Philadelphia, two being crystals of salicine, and one crystals of phloridzin, one crystals of chloride of copper, one of fresh water algae from the Adirondacks, etc.

Mr. G. W. Morehouse, of Wayland, New York, contributed one dozen slides of fossil and recent diatoms. The specimens contributed by both these gentlemen were much admired for their skillful mounting.

A hearty vote of thanks was returned to each of the donors.

Encouraging letters were read from a number of practical working microscopists, expressive of the kindest hopes regarding the future of the young society.

A paper contributed by J. Edwards Smith, of Ashtabula, Ohio, on the use of Damar varnish as a mounting medium for test objects, was read to the society.

A paper was also read from G. W. Morehouse, of Wayland, New York, on the comparative results obtained by the use of Tolles' old three system, 1-50, and the new four system, 1-10, confirming the statements of Mr. J. Edward Smith, of Ashtabula, Ohio, in regard to the latter glass, published in a previous number of the MEDICAL NEWS. Mr. Morehouse states that the best work of the former was unequivocally excelled by the performance of the latter. This is a great gain, as the 1-10 gives a great increase of light and a better definition, as compared with the 1-50. The most remarkable point in Mr. Morehouse's investigation is this: That the optician can, by a new and simple combination of lenses, with a focal distance as low as one-tenth of an inch, secure better performance than can be obtained by the old system, 1-50 of an inch focal distance. This seems to be the greatest triumph of the optician's art as regards the construction of objectives.

Mr. Dod, secretary of the society, stated that he had ordered one of the four system one-tenths, and that the members could soon have an opportunity of judging from practical demonstration of the value of this new objective.

The society then adjourned, and the members proceeded to an examination of the slides lately received, and to a test of the performance of a Gundlach's one-sixteenth objective on the Moller probe platte. This was followed by an interesting discussion of the theory of "ultimate atoms," as set forth by the president, Dr. Cutler.

MEETING OF DECEMBER 7th. The society met at the usual hour. Dr. J. A. Thacker, of Cincinnati; Prof Chas. E. West, of Brooklyn, New York; C. Leo Mees, of Columbus, Ohio; Edward Moulton, of Wooster, Massachusetts, and B. F. Quimby, of Philadelphia, were elected corresponding members. The secretary announced the receipt of one dozen beautiful slides, of entire insect preparations, donated by T. W. Starr, of Philadelphia; also, one-half dozen slides of crystals, for polariscope, from Dr. A. F. Holt, of Cambridge, Massachusetts. Two slides of diatoms were also received from Charles Stoddard of Boston; and Mr. A. F. Dod, of Memphis, contributed two elegantly prepared slides—one of microscopic shells from Barbadoes; and the other scales from the common fern. The preparations of Mr. Starr were much admired for their perfection of finish and artistic style of mounting. The slides were accompanied by a paper, giving in detail the donor's method of working in this species of mounting. It was read by the secretary, to the great delight of the members, most of whom acknowledged that it was far superior to their own *modus operandi*.

A resolution of thanks to the donors of the various preparations was passed, after which the secretary read a number of letters addressed to the society. Among these we may mention one from John Pierce, secretary of the Providence (Rhode Island) microscopical club, announcing that a box of slides would soon be sent for exchange; acknowwldgments of election to corresponding membership from Dr. J. J. Woodward, of the army medical museum at Washington; Dr. R. H. Ward, editor of the department of microscopy of the *American Naturalist*; H. C. Clay, Shreveport, Louisiana; also a letter from Dr. Harrison, secretary of the biological section of the Maryland academy of sciences, mentioning the fact that their association would be glad to exchange material or slides at any time, and that they proposed soon to forward specimens of their handy work for the inspection of the Memphis Club.

The secretary explained the workings of the Postal Micro-Cabinet Club, as detailed in a letter from F. B. Kingdon, secretary of the Margate (England) Microscopical Society. Mr. Kingdon's letter also extended the hearty good wishes of the English society, and expressed the hope that the two societies might be of material aid to each other. Mr. J. A. Omberg read an interesting paper in chrystalography, which called out a hearty vote of thanks from the society and a motion to publish. A lively discussion ensued on certain points sprung by Mr. Omberg's essay, after which the society adjourned to the next regular meeting, first Thursday in January.

Correspondence.

PARIS, FRANCE, OCT. 26, 1874.

DR. THACKER, *Editor of* MEDICAL NEWS,

Dear Sir.—This date finds us in the beautiful city of Paris, the city of palaces, churches and boulevards; the city of art, sculpture and paintings; the city of life, gayety and fashions; and also the city of literature and medical science. By the extravagance and magnificence of its rulers a large proportion of its population are reduced to pauperism, and near one third of its inhabitants die under the protection of its hospitals and alms-houses.

About 160,000 patients are annually treated at its hospitals and dispensaries, which explains why so many medical students and physicians come to Paris to prosecute clinical study; for out of this large number of patients, in a short space of time, almost every variety of disease may be seen, and almost every known surgical operation be witnessed. As this is one of the great medical centres of the world, I thought it might interest your readers to know something of what I have seen of these institutions.

There are about forty different hospitals and alms-houses in the city, supported at an annual expense of about 19,000,000 francs. The average cost of each patient per diem, in the hospitals, is a little over two francs, or about forty cents; and in the alms-houses about twenty-three cents per day each. All public places of amusement pay a tax of eight per cent on their receipts towards the support of the hospitals.

One of the oldest of these institutions is Hotel Dieu, founded in the year 660. I was much interested in walking over its clean, but quaint old stone floors, in its cellar-like mortuary and dissecting room, in viewing the little old amphitheater, that holds only about seventy five to a hundred persons, with its rows of narrow wooden benches without backs, where many of the

great surgeons of France received their first instructions. This hospital contains 834 beds; the average mortality is one in eighteen. The old hospital building is soon to be superseded by a new one, north of Notre Dame.

The St. Louis hospital is chiefly designed for the treatment of cutaneous diseases and scrofula. It has 828 beds, the number of in-door patients having considerably diminished since the discovery of a new method of curing the itch in two hours. It has a large bathing establishment, which has served in a single year 180,000 persons. There are two clinical lecture rooms in this hospital; mortality, one in forty-nine.

The Hopital du Midi receives exclusively male syphilitic patients. The clinical lectures of Dr. Ricord continue to make this hospital celebrated. The annual average number of patients is 3,300; mortality, one in twenty five.

The Lourcine is reserved for female syphilitic patients, with an average number, in a year, of 2,000.

Every student or physician, desirous of a place as interne in an hospital in Paris is obliged to pass some time in this.

I suppose it is thought to be a good training school, or else it is, that he must do penance, as it is the most disagreeable and disgusting place this side of perdition.

It was with very great pleasure and interest that I visited the Hospital Militaire du Val de Grace, which has attached to it a military school of medicine and surgery. As you enter the quadrangular court, you will see to the left the sturdy form of the celebrated surgeon Baron Larrey, in bronze. The statue is nine feet high, resting on a pedestal of white marble, and represents Larrey leaning against a howitzer. In his right hand he holds Napoleon's will, opened at the words: "I leave 100,000 fr. to the Surgeon-in-chief Larrey, the most virtuous man I know." Would there were more persons of Napoleonic appreciation. In the second court there is a fine statue of the celebrated surgeon Broussais, who also is interred there. The heart of Baron Larrey is preserved in a casket, in the church of Val de Grace, just in front of the principal court. It, of course, must be seen as well as the silver casket, containing the hearts of the Bourbon family. This hospital is very extensive and contains 970 beds.

There are two principal obstetric hospitals in Paris. One, at the Place de l'Ecol de Medicine, has an annual average of a thousand accouchments. Clinical lectures are given here, and it is the only hospital of the kind to which students are admitted. The other, hospital D'Accouchment, is much larger and averages annually four thousand patients. Medical students are excluded from this hospital, which is devoted to the instruction of young women, educating as mid-wives. There are generally about eighty of these women students. The charge for board and instruction is six hundred francs a year. After two years study they are examined, and if they obtain a diploma, are allowed to practice. There are four hundred and fifty licensed mid-wives in Paris.

We shonld have a similar training school in our city, and require women, practicing as mid-wives, to be qualified the same as physicians.

The Amphitheatre of Anatomy for the hospitals of Paris consists of well ventilated galleries, one story high, lighted from the roof, a museum, a theatre for lectures, and several private rooms for dissections. The bodies are obtained from the hospitals; the number annually dissected here and at the Ecole Practique, exceeds four thousand.

One of the superior schools of medicine is located at Paris, the other at Montpelier. The faculty of the Paris medical school is composed of twenty eight senior professors, appointed by the government, and twenty

nine professors (*agreges*), appointed by competition, and who lecture and examine in the absence of the professors.

Foreigners are admitted as students and to take the degrees in the French medical schools. To enter for this purpose, the student must be eighteen years old, and, if a minor, must produce a legalized certificate of consent from his father or guardian for the step he is taking. He must likewise be furnished with a certificate of his personal respectability, and, if he is a minor, his father, guardian, or some responsible person must go security for his good behaviour. A course of four years study is prescribed before the student can be admitted to examination for the degree of Doctor of Medicine, or of Medicine and Surgery. The students must enter at the commencement of the scholastic year, which is the first of November. On lodging the above papers with the secretary of the faculty, together with a diploma of *hachelier-es-lettres*, he enters his name in a register, kept for that purpose, and is given a *carte d'inscription*. He renews his inscription every quarter, until he has taken out sixteen inscriptions. At the expiration of his last inscription, which is at the end of the fourth year, he can apply for his final examination. The student must pass an examination in July of the first, second and third scholastic years, on the subjects of study of those years; failing in any of which, and in another trial in November, he can not present himself again for examination, nor can he take out another inscription, till after the lapse of a year. From the eighth to the sixteenth inscription, the student must attend a hospital. There are five examinations, and after them the thesis. The last examination is clinical. Two cases in the hospital are selected, on which the diagnosis, prognosis and treatment are expected to be given. The thesis is a printed dissertation on a subject, selected by the student, and a discussion *viva voce*, in support of it, and on fourteen questions, drawn by lot, corresponding to the fourteen branches, taught in the schools. For the degree of Doctor of Surgery a further examination is to be undergone. A rejected candidate may be re-examined at the end of three months.

All the lectures at the medical college and hospitals are public and gratuitous; but the fees for the inscriptions, which are necessary to graduation, are fixed by law. For the sixteen inscriptions, the different examinations, thesis, diploma, etc., are paid for, at the time of taking each, and all together amount to 1260 francs. A diploma entitles the holder to practice in any part of France. The students are selected for the hospitals, by *concour*; they remain in office for three years and receive a salary of 500 fr. a year.

A peculiar feature of the medical schools of Paris, is the "concours." Most of the professors are appointed under this test. A series of subjects, drawn by lot, are proposed to the competitors, who treat them both in writing and orally; each lesson is delivered in public, and before the faculty, and it must occupy an hour. Each candidate must, moreover, write a thesis on a subject selected by the judges, and defend it publicly. To this test, no doubt, the Parisian medical school owes her reputation of being one of the first, and the summit of medical literature. Certificates of medical studies in a foreign faculty, are taken in France, in deduction of those required for a degree. It is required here, as in most European countries, that the medical student must have the degree of Bachelor of Science before he can take a medical degree. The holder of a foreign medical diploma, wishing to have a French one, has to submit to the examinations established for that degree.

Most every arrondissement, or District of Paris, has its Medical Society, but the two most important are the "Societi de Medecine de Paris," and the "Academie Nationel de Medicine." The former devotes its attention to

epidemic diseases and the human constitution, and keeps up correspondence with physicians and scientific men in France and also in foreign countries. It publishes the *Revue Medicale.* The National Academy of Medicine is composed of a hundred resident members, fourteen free members, and thirty-two foreign associates. The object of this institution is to reply to inquiries of the government, relating to everything that concerns the public health. Very respectfully, A. J. M.

JONES STATION, OHIO, DEC. 26, 1874.

Mr. F. J. MAYER, *Member of the Board of Trustees, of the Cincinnati Hospital:*

DEAR SIR:—A reporter, calling himself an "impartial searcher after truth," furnishes the *Cincinnati Gazette*, of the 11th inst., with some remarkable information relating to the Cincinnati Hospital and the various medical colleges of the city. He says of the colleges, that "each has unrestricted access to the Cincinnati Hospital." That the "Miami College was established in 1852;" that "during the war it was suspended for a few years, nearly the entire faculty being in the army." He further says, "the faculty of the Miami College is composed largely of men who are known and esteemed in the city, not less for their high professional attainments than for their character as upright *Christian* gentlemen."

Now, my dear sir, what does all this mean? Who gave this information to *an impartial searcher after truth?* Is it irony? Can it be slander? When, may we ask, did "each of the medical colleges have unrestricted access to the Cincinnati Hospital?" Certainly not within the history of your board. There is not a grain of truth in this statement, and you must be aware that it is an "unrestricted" falsehood. Did some one of your colleagues have it injected into this report to cover, as far as possible, the proscriptions and illegalities now practiced in the hospital? You should have told this reporter that the colleges are restricted in the hospital to such privileges and places as can not be occupied by the relatives, personal friends, and business partners of your board. That the action of your board, whereby you permitted your staff, in violation of law, to engage in private class teaching in the wards of the hospital, was intended to strike a death blow to the prosperity of those colleges which depend on that institution for clinical facilities, by making the fees too onerous to be borne. That your purpose is to destroy the medical colleges now in the city, and build up a new college enterprise, in which that portion of your ring, belonging to the medical profession, shall be the faculty of the college and the staff of the hospital.

Again, who informed the reporter that the Miami Medical College, of 1852, suspended to enable its faculty to go into the army? Was it a *Christian* gentleman? Why, my dear sir, this college was not only suspended, but dead and buried five years before the war began. In 1856 it became a part of the Medical College of Ohio; and the session following each of its alumni received the Ohio College diploma. The war had no more to do with this suspension than the horse now driven by the half-brother of Western Surgery.

We will now leave this report and look into the hospital.

Dr. Muscroft, one of the members of your staff, who takes pay for his services from medical students, when the law says the staff shall serve without compensation, during the months of October and November, frequently, as we are informed, declined to lecture at his advertised hour, giving as a reason for it that he had no cases to bring before the class. The gentlemen,

having his private ticket, would then pass with him into the wards, while the others, who had not purchased it, would be left to return to their respective colleges for didactic teaching. We thought it possible that there might be in the wards cases reserved by Dr. Muscroft, to make his ward-teaching attractive, and we stated that a man, who would do an unlawful act for gain, would take advantage of all opportunities to make the gain large; but Dr. Conner, another member of your staff, as we are informed, disputed the proposition, and declared in the amphitheatre of the hospital, a few days since, that no cases are kept back. Now does Dr. Muscroft state falsely, and is Dr. Conner employed to cover up for him? If not — if there were no cases to be brought into the amphitheatre, and none reserved in the wards, what a sad commentary on the management of the hospital. While private institutions are well patronized, the Cincinnati Hospital, the only public one in the city, costing the tax-payers for its erection more than a million of dollars, and requiring annually for its support near a hundred thousand, and surrounded by a population of near three hundred thousand, cannot command material for a surgical clinic of but an hour's duration. If there is no lying here, then Cincinnati has only the clinical advantages of a country town, and the pretensions, that it is capable of being made a great medical centre, are a mere sham.

In answer to your queries we must assure you that we are not out of humor, but speak the words of truth and soberness. When we remember the many insults and injuries which from time to time we have received from your board — when we call to mind the fact, with which you must be familiar, that we declined a proposition, which was made us, to go into the Good Samaritan Hospital with our students and members of our faculty, to share its clinics with the Medical College of Ohio, that we might patronize and support the Cincinnati Hospital; and when we remember the promises you made us, and the manner in which you betrayed us; and above all, when we see you put representatives of other college faculties on your staff, denying to us similar representation, and giving to them power to drive our students out of the wards of the hospital, or compel them to pay unusual and onerous fees for services, which the law says shall be rendered without compensation, we cannot be silent. Could you occupy our place, with the history of the hospital before you, you would not only not remain silent, but you would make use of much severer language than we have. We have no desire to wound the feelings of any one, or to misrepresent any one; we have made no dishonorable proposition; we seek no combination with any person or party that can damage the honor, or in any way stain the character of an upright christian gentleman, and we therefore remain, Respectfully R. C. S. Reed.

Book Notices.

Specific Diagnosis—A Study of Disease with Special Reference to the Administration of Remedies. By John M. Scudder, M. D. 12mo. pp. 387. Cincinnati: Wilstach, Baldwin & Co. 1874.

Our friend, Brother Scudder, is a great book-writer. We do not know how many books he has issued, but we know it is a good many. The one on our table, on "Specific Diagnosis," is the last. The object of our contemporary, in this work, as he states in the preface, "is to make a study of the prominent expressions of disease, with reference to the administration of remedies;" for "we believe that the expressions of disease are uniform,

and always have the same meaning, and that the action of remedies is something definite and uniform—'that like causes always produce like effects.' If we properly study our cases, so as to determine a definite condition of disease, and know the direct action of remedies in such conditions, we will have a certain and rational practice of medicine." In other words, Brother Scudder, like the homeopathists, believes that medicine is a science, and all that is necessary to practice it as a science, is to observe certain "expressions," and employ certain medicines. Our friend has frequently been charged with homeopathic proclivities, and we very much fear, from his preface, that the charge is not without foundation. Certainly we have the ear-marks in it.

On looking into the body of the work our apprehensions, in regard to the author's homeopathic tendencies, are increased. On nearly every page we find symptoms discussed and the remedies that are suggested. On page 86 it is said that "there is a *pinkish* color of parts freely supplied with blood, that is regarded by some as an unpleasant symptom. As this color becomes more pronounced, we observe it in the veins as well." For this symptom is prescribed small doses of pulsatilla, actea alba, helonias. "The dull, colorless eye is the best indication for belladonna'" "The tongue large, thick in center, with in-curved edges, and of a dull blue, or leaden color, is is one of the strongest indications for arsenic." When *dryness* of the mouth exists, we have indicated iris versicolor, phytolacca, panax, etc.; and thus, throughout the work, in the manner of the homeopathists, are mere symptoms made prominent, while what is back of them does not receive corresponding attention. This is an exceedingly handy mode of practicing medicine. The physician is quite relieved of all trouble in hunting up pathological lesions; he needn't be bothered with studying the constitution of his patient, habits of life, idiosyncrasies, inherited tendencies, nature of prevailing epidemic, etc., etc., and weighing the conclusions arrived at with the prescription he makes Not at all—he is relieved of all such troublesome tax of mind. He is only to hunt for a *pinkish color*, and, if he finds it, prescribe pulsatilla; or, if there is a dull, colorless eye, he knows that belladonna is indicated; or, if there is a large tongue, thick in the center, arsenic "is good," for "like causes always produce like effects," and "the action of remedies is something definite and uniform."

On page 123 Brother Scudder's feelings are badly torn up by a young lady's urine. She had hysteria, and urinated a great deal, like a great many young ladies do under similar circumstances. The urine was perfectly natural in color, and contained neither sugar nor albumen; and yet, on analysing some, he came to the conclusion that "her life's blood was imperceptibly oozing away with it." And what was it he found that justified this heartrending conclusion? Why, he found urohæmatin, one of the *normal coloring matters of the urine.* When normal urine is intimately mixed with sulphuric acid, a deep garnet red coloration is produced, but there is no need to be frightened—it is only occasionally, when urohæmatin is in excess, that it indicates disintegration of the blood. Let the urine be a little concentrated and the coloration produced by the acid will be black and opaque. Even in a slight catarrh we will have the urohæmatin in excess, giving a black color by sulphuric acid.

But we do not wish to intimate that Brother Scudder's work is valueless, on the contrary, it contains much of value, and will well repay a reading by anyone. Our friend shows, all through his book, that he is a close observer and a good student. He has studied *symptoms* well, and gives to many a significance that it would be well for practitioners to better observe than we know they are in the habit of doing. We know, from our own obser-

vations, that too many doctors are too much in the habit of doctoring *the disease*, and are blind to its expressions. A close reading of this work by such would tend much to enlighten them, and cause them to see much that they never before were in the habit of observing.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA, at its Twenty-fifth Annual Session, held at Easton, Pa., May, 1874.

These transactions make a handsome volume, bound in paper, of 454 pages. There is contained the address of President Dr. S. B. Kieffer, and several other addresses, among which we notice one by Dr. Thos. M. Drysdale, of Philadelphia, on surgery, and another by Dr. Wm. B. Atkinson, the Secretary, on obstetrics. The remainder of the work, besides the business transactions, is composed of valuable papers by various members, reports of District Societies, etc. The volume is a valuable one, and worthy of careful preservation.

CLINICAL LECTURES ON DISEASES OF THE URINARY ORGANS. Delivered at University College Hospital. By Sir HENRY THOMPSON. Second American, from the third and revised English edition. With illustrations; 8vo. pp. 195. Philadelphia: Henry C. Lea; Cincinnati: R. Clarke & Co.

The present edition contains the course delivered by the author at the University College Hospital, and eomprises, therefore, all the most recent alterations, as well as two lectures not in the previous editions, making fourteen in all, instead of twelve, as before.

The name of Sir Henry Thompson is sufficient assurance of the value of the lectures, and they, therefore, require no commendation from us. There are treated: stricture of the urethra; hypertrophy of the prostate and its consequences; retention of urine; extravasation of urine and urinary fistulæ; retention of urine; stone in the bladder; lithotrity; lithotomy; the early history of calculous diseases and the treatment best adapted for its prevention; cystitis and prostatitis; diseases of the bladder, paralysis, atony, juvenile incontinence, tumors; hæmaturia, and renal calculus.

TRANSACTIONS OF THE MEDICAL SOCIETY OF NEW JERSEY, FOR 1874.

This is a handsome volume, paper cover, of 270 pages. It contains the recorded proceedings, President's address, and reports of the District Societies, in which are embodied interesting papers on various subjects connected with medicine.

There is no more valuable medical matter published than the volumes of proceedings of medical societies. They should always be carefully preserved for future reference; for, from year to year, they exhibit the progress of medicine in a very satisfactory manner.

THE LADIES' REPOSITORY.—This is a magazine for ladies, of a high order, and we take pleasure in recommending it. It comprehends the widest range and the greatest variety possible in the literary matter of its pages—essays, disquisitions, adventures from real life, biographical and critical sketches, poems and papers of practical utility.

Two finely executed steel engravings appear in each number. Published in Cincinnati by Hitchcock & Walden. Price $3.50 a year.

Editorial.

TO SUBSCRIBERS. — Hereafter, as was announced in the December number, the price of the MEDICAL NEWS will be *two dollars* a year. As will be perceived, the journal is enlarged by an increase of reading matter, and is printed on paper much superior to what it formerly was — besides being furnished free of postage.

The terms are *in advance*. As the money must be promptly forthcoming for type-setting, paper, press-work, binding, postage, etc., it is found impossible to continue sending the journal from month to month, and even in some instances for more than a year, to parties without receiving a cent, as has been done in many instances in the past. The losses sustained in consequence each year amount to several hundreds of dollars, and it is the intention to discontinue the practice.

The present number of the MEDICAL NEWS, at the suggestion of their friends, will be sent to a number who are not subscribers. If such desire to subscribe, they should remit to the undersigned, as otherwise the journal will be discontinued.

J. A. THACKER, M. D.
N. W. cor. Plum and Longworth Sts.

THE NEW YEAR AND OUR NEW VOLUME.—The old year has passed away, and we have entered upon a new one. Whatever has transpired during the year which has just closed has become a matter of the past, and concerns us only as we may learn from it; and he is a wise man who permits the past to teach him. With some the old year 1874 has been a year of sorrow, with others of joy, and with still others of joy and sorrow; but whether of happiness or unhappiness, or both, we can derive instructions from its experiences during our lives, if we only give them the attention which, as intelligent beings, we should. Each year of our lives should be regarded as the lesson of a page, which, if we have learned well, will save us much stumbling when we enter upon the lesson on the next page.

We wish all our readers a happy new year. We hope that both old and young may have health and happiness during the continuance of 1875, and that all may live to enjoy many other new years. But time passes, and if we wish to enjoy our moments, we must be up and doing. With those of us who are physicians, there is much for us to do, and it should be our pleasure and happiness to discharge the duties which devolve upon us. With the rapid progress that is going on in the world, with the increasing complexity of society, with the wider extension of human wants in every department of life, and the higher plane to which all are rising, greater qualifications and greater skill are almost daily demanded of the physician. So much of late years has been discovered in the cure and prevention of disease, especially as regards the latter, that medicine now holds a high position as one of the *useful arts*, and the physician is looked upon as a skilled artisan who thoroughly understands the science of his calling. But if any of us have a consciousness that we are below the standard that is accorded to us, the feeling is not a comfortable one—not one in which we can take pleasure. We can only experience real enjoyment when we know that we are pressing on to the highest mark of our high calling. It is our sincere desire, therefore, that all of our readers may have during the present year a higher degree of happiness that comes from an industrious cultivation of their profession than they ever experienced in any previous years.

On our part we intend to strive to make the new volume of our journal better than any of the previous ones. We think we know wherein we can

make it more entertaining and instructive, and we design bending our efforts to that end. Medical editors are pretty generally practitioners of medicine, who are much occupied in visiting their patients, and whose time is taxed in a multitude of ways, so that oftentimes there seems but little to spare for their journals; and we form no exception to the general rule. But much can be done by improving odd moments, and we hope by thus economizing time to be able to employ more care than heretofore in presenting subscribers to the MEDICAL NEWS such reading matter as will meet their wants. In short, it will be the aim, to the fullest extent possible, to make our journal a fair exponent of medical progress, both as regards original contributions and selected matter.

With the present number of the MEDICAL NEWS we commence to furnish subscribers an increased amount of reading matter. It will be noticed that the type employed, which was cast especially for us, is much smaller than that heretofore used, and is equivalent to adding one fourth more pages. Add to this prepayment of postage by us, which previously has been paid by the subscriber, and the MEDICAL NEWS, at two dollars a year, is the cheapest medical journal published in the United States. Besides the increased amount of reading matter, it will be observed that a much better quality of paper is made use of, which certainly has the effect of improving the appearance of the journal. It will thus be seen that we are not sparing in expense to present to our patrons a first class journal. These additional expenditures are not light, but heavy, adding some hundreds of dollars to the cost of publication—but we desire to please our subscribers, feeling that our efforts on their behalf will not go unappreciated.

As stated before, we have instituted a department of Microscopy, which we feel sure will meet with general approval. The microscope is daily assuming more and more importance in practical medicine and in every department of scientific research. So much so is this the case that physicians, pharmacists, scientists generally, and every one who desires to be regarded intelligent, are compelled, *nolens volens*, to become more or less practically familiar with it. The physician especially needs it now at every step; scarcely a day passes but that he has to call in its aid to determine the nature of disease, its progress etc. So extended is the use of the microscope that a single text-book on the subject is not sufficient, nor are two or three or a dozen; but a current literature is required.

New developments are being constantly made, and a work on microscopy a few years old is as worthless as a work of the same age in some department of practical medicine. Besides original and selected articles, we will publish from month to month, papers read before microscopical societies, proceedings of societies, criticisms, microscopical news, etc., etc. We promise that this department alone will be worth many times the price of the journal, for it will contain a vast amount of important information that can not be obtained from books at all.

DEATH OF DR. S. P. BONNER.—It is with sorrow that it devolves upon us to chronicle the decease of DR. S. P. BONNER, well known, among the physicians of this city. He died Tuesday morning, December 22d, of consumption. Had he lived and been able to have cultivated his profession with that assiduity that is done by many, he would have undoubtedly attained to a very high position in his profession. He had an active mind with quick perceptive faculties, and was soon able to grasp a matter that was brought before his attention.

A meeting of the profession of the city was held December 23d for the purpose of expressing their sentiments in regard to the death of DR. BONNER. Dr. C. G. Comegys presided, and Dr. J. J. Quinn acted as secretary.

The following gentlemen were appointed a committee to draft resolutions: Drs. W. T. Brown, T. C. Minor, J. J. Quinn, W. H. Taylor, Thos. H. Kearney, J. A. Murphy.

The resolutions, which were unanimously adopted, are as follows:

"WHEREAS, It has pleased an all-wise providence to remove from us by death our highly esteemed friend and fellow-practitioner, Dr. S. P. Bonner; and

"WHEREAS, We, his associates, deem it a duty to give an expression to our sentiments in relation to this afflicting dispensation; therefore,

"*Resolved*, That in the death of Dr. Bonner the profession loses a good physician and surgeon, and society one of its brightest ornaments.

"*Resolved*, That we will gratefully cherish the memory of our deceased brother.

"*Resolved*, That we tender to the family of the deceased our heartfelt sympathy; that a copy of these resolutions be sent them, and that they be published in the daily papers and medical journals of our city."

THE EDITOR of the Philadelphia *Medical Times* thinks that a committee of several microscopists should be appointed to settle the matter in dispute between Dr. J. G. Richardson and Prof. Hunt, of the Woman's Medical College, as to the comparative merits of the former's 1-50 and the latter's 1-10—or the advantages of high over low powers. Out west such subjects have been settled long ago and are getting a little stale. They seem, however, to be only just springing up in Philadelphia.

BY THE WAY a friend, to whom we loaned our Seibert's 1-6, described in a previous number of the NEWS, confirms what we then said of it. It has shown him the striæ of the n. crassin. of the slide by Wheeler, old, dry, and thin, mentioned on another page as badly *straining* a 1-10 wet by one of the most eminent makers; the striæ nicely of p. scalprum; the hexagons, by central light, of t. favus; and gave him a glimpse of the longitudinal lines of sur. gemma; still he is not happy. We are sad.

TEXAS DOCTORS.—They tell a queer story about the doctors in a certain Texas town, who were all away last summer to attend a medical convention. They were absent about two months, and on their return home found all their patients had recovered, the drug store had closed, the nurses had opened dancing schools, the cemetery had been cut up into building lots, the undertakers had gone to making fiddles, and the hearse had been painted and sold as a circus wagon.—*American Medical Weekly*.

AN UNUSUAL OFFER.—Dr. E. S. Gaillard, editor of the Richmond and Louisville Medical Journal and the American Medical Weekly, will furnish, hereafter, to subscribers of the first journal twelve portraits of distinguished European and American physicians. To the subscribers of the Weekly he will furnish two of these portraits a year, one in each volume. The price of the monthly is $5.00; and that of the weekly $2.00

THE SCHOOLDAY MAGAZINE for January, 1875, appears in a much enlarged and improved form. This number begins the Nineteenth Annual Volume, and is now the oldest among all the juvenile periodicals, and is steadily growing and improving. George Cary Eggleston's story of the Creek Indian War, is alone worth the price of the whole magazine. The chromo given to its subscribers is very handsome. Terms, $1.50 a year. Send ten cents for specimen number to J. W. Daughaday & Co., publishers, 434 and 436 Walnut street, Philadelphia, Pa.

Dr I Hays

THE

CINCINNATI MEDICAL NEWS.

VOL. VIII. No. 86. Old Series. | FEBRUARY, 1875. | VOL. IV. No. 2 New Series.

Original Contributions.

TREATMENT OF DISEASE.

Report to the New Jersey State Medcal Society.

BY STEPHEN WICKES, M. D., S. C. THORNTON, M. D., AND THOS. RYERSON, M. D.

Hydrate of chloral is commended by one as the most valuable remedy we possess in the management of whooping cough, especially in children, administered as early as possible after the whoop appears, and continued at regular intervals of from two to four hours. Improvement is usually apparent in two days, in most cases. When the whoop has existed for any length of time its effects are not so apparent,—to secure its good effect it must be regularly administered, so that the effect of the remedy may be steadily maintained.

The Reporter for Warren county quotes Dr. Clark, of Belvidere, as remarking that almost all cases of pneumonia are successfully treated on the principle that it is a self-limited disease, needing only sustaining and quieting treatment, this is effected by the use of some form of opium, to the point of relief from pain and restlessness. Verat. viride or digitalis as a heart quieter—stimulants and nourishment as each case demands.

The Reporter for Sussex adds his testimony to the good effects of ice in the sore throat of scarlatina, applied in a bladder open at both ends and tied around the middle by a broad band, one or two inches wide, forming a pair of saddle bags. It is now tied at the ends by tape, and fitted under the jaws and secured around the head by the tape strings to keep it in position. This should be continued till the danger is passed. For the treatment of dysentery, Dr. Thomason initiates the treatment by a brisk saline purgative, sulph. magnes. preferred. He uses this in all cases unless too much debilitated, and even in those cases which he has heretofore regarded as too much in that condition. This measure is followed by opiates, with demulcent or astringent injections as the case subsequently demands. Dr. Mattison, of Morris, calls attention to the deep injections of chloroform for the relief of typical cases of tic doloureux. He refers to four cases in which the success of this method of treatment was complete, and such as to commend it to the attention of all interested in the healing art. The details of one of the cases are given in the report.

In Hudson county, as in former reports, the bi-sulphite of soda is highly commended, by some of the physicians, in the treatment of diphtheria and other toxic diseases, and is by them largely relied upon as a curative agent. Others who have used it have not discovered any special benefit resulting

from its use. Some of the medical men of this county have been led, from their observations, to question the value of alcoholic stimulants, in any form, as a curative agent, or as promising any virtue in sustaining the vital powers when under the depressing influence of disease or exhaustion. Dr. Morris details a series of cases in which his success in treatment without alcohol was satisfactory and fully equal and, he believes, greater than in cases treated with stimulants. In closing his report of cases, the doctor says, "before closing these notes of practice, I would raise my voice in condemnation of the custom (shall I say habit) that we, as medical men, have fallen into, of ordering alcoholic stimulants for all persons and all diseases, when, as yet, the fact stands out before us, that no one has informed us when they are positively indicated. Nor has any writer demonstrated beyond fear of contradiction any positive benefit to be derived by those who partake."

Before closing this part of the report, the Committee notice the commendation by some of the Reporters, of the new alkaloid of peruvian bark, known as cincho quinine. Dr. Schumo, of Sussex, whose practice requires a large administration of bark, remarks that he now uses cincho quinine to the entire exclusion of the sulphate of quinine, and finds that it answers fully as well—he is perfectly satisfied with the result of his three or four years' experience. He gives it in about the same dose. His plan of prescribing it, is to mix it with finely powdered gum guiac, thoroughly, in a mortar, one part of quinine with two of guiac, mixing the powder with honey which entirely conceals the taste. He also forms it into pills with molasses. The Reporter for Morris employs it largely and with much satisfaction.

The Committee addressed to each of the Reporters the following enquiries:

What have been your observations and those of your medical associates upon the use of chloral hydrate; also upon hypodermic medication?

And one other—Do the prescriptions of physicians, as a general thing, tend to make drunkards?

The replies to these enquiries have been full, and the reports in detail, where published, will be found to be interesting and instructive. For the purposes of this report a synopsis only is called for:

Dr. Gibbon, of Salem, remarks that chloral is extensively used in his vicinity, more so than in other parts of the county. As a hypnoctic, rapid in its action, it has no rival in all forms of nervous excitement unattended with pain, and is free from the unpleasant effects of opium, except as it occasionally causes nausea—given in doses of from ten to seventy grains, twenty grains being a medium dose. Miss Sarah McIntosh, M. D., commends its use in the first stage of tedious labor, particularly in primipara. She regards it as the most valuable remedy we possess in this relation. In twenty grain doses it moderates the pains, hastens dilatation, and leaves the patient in so comfortable a condition that she dozes off between the pains, and after delivery almost immediately falls into a refreshing sleep, without producing the complete insensibility which accompanies the use of chloroform or ether, and without being supplemented by nausea or vomiting, it has, in ordinary cases, nearly all the advantages which attend the use of those anesthetics.*

* The writer of this report had just finished this commendation of Miss McIntosh, when he was called to a case of labor. It proved to be "the first stage of tedious labor," and a *primapara*. He gave twenty grains of the drug, which arrested the force of the pains and had no effect on the dilatation of the *os*. This condition was so long delayed, that when it did occur, the exhaustion consequent upon the prolonged labor rendered necessary a resort to the forceps. He was caught once, but only once, in much the same way, in the earlier days of chloroform to which he had resorted to hasten uterine relaxation.

In Camden county the drug is used with satisfactory results, particularly where opiates are inadmissible. Care is advised in its persistent use, for it may not be steadily increased without immediate danger, and it should be avoided in all cases where chloroform is inadmissible.

In Union county a difference of opinions exists in regard to its use, some of the medical men seldom use it and regard it as a dangerous medicine, while others esteem it of great value. Combination with Morphine, in the observation of Dr. Silvers, secures excellent effects. Dr. Tomlinson never gives over ten grains, and states that by its use one of his patients, addicted to the use of opium, was entirely weaned from it by small and increasing doses of chloral. The same testimony in breaking up the habit of using morphine is given by the Reporter of the same county. He further states that he has used it continually in his practice for three years without bad results in any case. He has failed to derive benefits from its use in delirium tremens.

In Warren county D. Cook uses it occasionally in nervous patients, and seldom finds it to produce unpleasant effects. He combines it with brom. potass., seldom giving more than ten grains of each in cases requiring a nervous anodyne. Dr. Clark has used it extensively, but it has dissappointed him so often that he now uses it less frequently, but regards it as a valuable remedy in cases dependent upon exhaustion of nerve power. He remarks that in cases of puerperal mania and delirium tremens, brom. potass. and morph. combined will do, in most cases, all that he ever saw claimed for chloral. Dr. Hartpence has employed it in cases of mania a potu with most satisfactory results. Dr. Paul's opinion is unfavorable; he now uses it but very seldom. He derives more benefit from its use in neuralgia than in any other form of disease. Dr. Crane says that its effects are uncertain, producing at times an alarming degree of prostration, and in one instance a fatal result followed the administration of a small dose. The Reporter uses it but seldom, and is careful in giving it in lung affections and in enfeebled heart action. In the restlessness of chronic phthisis, although its hypnotic effects are speedy and so far satisfactory, yet its succedanea are unpleasant, leaving a prostration of nerve power, and a congested pulmonary circulation.

Dr. Culver, of Hudson county, regards it as a most valuable agent for many cases requiring prompt relief from pain and sleeplessness—has never known it to fail to induce the desired anæsthesia within a brief period of its administration. He has used it, with equal success, combined with the mur. of morphia and brom. of potassium. The largest dose he has given to an adult is ʒi, repeated if necessary once or twice, rarely more times, and at half hours intervals. No ill effects have followed its use in his observation; nevertheless, he believes that it deteriorates the oxygen-carrying capacity of the blood, and impairs all the vital functions, for a time. Its therapeutical use should therefore be restricted to certain temporary emergencies, and it should never be administered day after day for a long period continuously, and its use should be interdicted to all who from exhaustion from any cause are in a state of extreme anæmia. The Doctor has employed it in repeated small doses and in various combinations for the relief of asthma, and to moderate the cough in phthisis and pertussis. It answers the purpose temporarily, but possesses no notable value in these cases.

Dr. Buffet, of the same county, remarks that the effects of chloral have not in his experience been so reliable, nor in all cases so pleasant as to lead him to prefer it to other standard remedies of similar action. When, however, these cannot be used, chloral has its appropriate place as a substitute.

Dr. Marcy, of Cape May, says of his own experience and that of those with whom he is associated that their impressions of the remedy are not favorable. It disappoints as frequently as it answers their expectations.

In Mercer county it is used largely by the physicians, but not so indiscriminately as when it was first introduced. Patients in a certain stage of excitement from drink are more benefitted by chloral than by any other treatment. In the Insane Asylum Dr. Ward reports that it is invaluable, and that it may be continued for months as a hypnotic without injury to the health, and without producing a habit, as does opium.

The Reporter of Morris county remarks that, as a soporific pure and simple chloral stands without a peer; as an anodyne no reliance whatever is placed upon it. It is used largely in Morris county, and in no instance with recognized ill effects.

The Reporter for Gloucester county, Dr. Garrison, obtained replies to enquiries made from twelve of the physicians of the county with the following result, which we give in his succinct and original way: as to its safety, 2 pro, 2 con.; as to its general utility, 11 pro, 1 con.; as a hypnotic, 11 pro, 1 con.; as an anodyne, 3 pro, 9 con.; as a sedative, 2 pro, 10 con.

In Sussex county, Dr. Maines considers chloral without a parallel in nervous diseases, such as hysteria, tetanus and epilepsy. He uses it in combination with brom. pot., and believes its effects are better so given than when alone. In nervous disorders, such as neuralgia, etc., he combines it with morphia. Dr. Moore uses the remedy in cases of cerebral disease, contra-indicating the use of opiates; also in whooping cough, in combination with belladon. and per. mang. of pot. Dr. Westfall has had success in allaying by its use paroxysms of spasmodic asthma.

The second subject of enquiry is

HYPODERMIC MEDICATION.

Dr. McLean, of Monmouth, whose experience in this remedial procedure is extensive, commends the injection of morphia as the most efficient mode of relief in patients suffering from incurable and painfnl diseases. Also for the cure of acute pains in cases of renal and biliary calculi—in intercostal neuralgia and the pleuritic pains common in the advanced stages of phthisis—in sciatica—in cholera and cholera morbus. He used it with benefit in a case of cerebro spinal meningitis, also in a patient who had from twelve to twenty convulsions daily from an affection of the spinal cord; also in puerperal convulsions, and in two cases of flooding, one ante-partum, the other post-partum. The syringe in his hands is chiefly employed in administering morphia in solution. He has, however, employed quinia in malarial fevers in a few cases; the effect upon the disease was favorable, but the injected points were affected subsequently by abscesses.

Three cases of varicose veins of the leg were cured by the injection of a single drop of per. sulph. of iron in several of the most prominent points.

The Reporter for Camden remarks, that the indiscriminate employment of hypodermic medication is injudicious. The blunted sensibility thereby produced in many cases prevents a correct diagnosis. In Salem county it is recognized and valued means of relief in all the severer forms of pain and suffering. The Reporter for Warren remarks upon its general employment, and upon the promptness and efficiency of its action, more especially in the use of morphia—its saving of time and speedy relief in cases of violent suffering.

Dr. Culver, of Hudson, after remarking that his experience of hypodermia is confined to two cases, states that it has come to his knowledge that very many unexpected deaths have suddenly followed the injection of mor-

phia. Dr. Morris, of the same county, relies upon it as possessing magical power in the relief of pain.

Dr. Marcy, of Cape May, is familiar with its effects in the injection of morphia, and, in a few cases, in the injection of strychnia, in two cases of typhoid disease in subduing nervous irritability. He has no doubt that in one case life was saved by the injection of 1-20 of a grain every six hours. In another, where extreme restlessness was present and inability to sleep, the same dose quieted the restlessness and induced sleep, after chloral and opium had both failed.

Dr. Bodine, of Mercer, remarks, that practically, morphia is the only drug for hypodermic injection, and that any one who has seen the instantaneous and complete relief of the most severe pain which hypodermic morphia effects can not doubt that it is one of the most valuable of our therapeutic resources. Its value in cases of mania can not be over-stated, and it may be said that the introduction of brom. of potassium, chloral, and hypodermic morphia marks an era in practical medicine.

The Reporter for Morris county says that a large experience warrants an emphatic verdict in its favor,—morphia, atropia, strychnia, quinia, and chloroform have been the agents employed in frequency as cited. The latter agent was used in an atrocious case of trifacial neuralgia, with remarkable results, a full report is herewith appended. Quinia in a case of typhoid fever did not benefit the patient. Strychnia in a case of obstinate neuralgia was used with much advantage. Morphia is the agent chiefly employed combined with atropia, regarding the effect of one increased by the other, and believing that any over action of either, if given alone, will be held in check by the antidotal properties of the other.

Dr. Westfall, of Sussex, uses hypodermic morphia constantly when a quick relief of pain is indicated, and, as yet, has to meet the first case where ill effects are produced.

Dr. Ryerson, of the same county, has used the hypodermic syringe for at least ten years, and with the happiest results and without accidents. He uses it invariably in every case of acute pain, such as colic, or severe accident, or on the invasion of pleuritis, or extraordinary after-pains, strangulated hernia, gravel, biliary calculi etc., etc. In detailing his experience the doctor also furnishes some practical rules for the management of the syringe, which are recommended for publication in full.

Dr. Garrison, of Gloucester, says that the views of his society upon hypodermy are harmonious. The almost universal remark being, "I should scarcely know how to get along without it." One only demurs, "having found better and more reliable" means. "I am at a loss to know," says he, "what '*means*' are referred to; another lamentable instance of 'the unequal diffusion of knowledge.'" The doctor's whole report is as racy as it is instructive.

The report upon hypodermic medication, extracts from which have now been given, warrant the following conclusions:

1st. It is very generally in the hands of the medical men of the state, and by many of them very extensively employed.

2d. It is a safe remedial procedure.

3d. It is chiefly valuable in subduing pain and suffering.

4th. Morphia in solution is the drug most extensively employed, and practically the only one on which general reliance is placed.

The third enquiry made by the committee is, "Do the prescriptions of physicians, as a general thing, tend to make drunkards?" This is not strictly a question of medical science, and yet it is a question belonging to medical history. Physicians are too frequently charged by over-zealous,

though honest reformers, as standing in the way of temperance reform, by the unwarrantable and indiscriminate recommendation of alcoholic stimulants. It seemed appropriate by the committe, at this time, to call forth the testimony of our medical men upon the result of their observations upon this subject. It is sufficient to say that the enquiry has been uniformly met by an universal and emphatic no. Not one has noticed a single instance of intemperance as caused, so far as known, by a physician's prescription. Many speak of the recognized danger of such prescriptions in certain cases, and of the caution they are led to exercise. "The charge is made," as Dr. Bodine says, "for the most part, by two classes of people, those most intemperate men who are seeking to make all men sober by legislative enactment, and those cowardly drunkards who, with the spirit of the first man Adam, are seeking an excuse for their own weakness and crime." It is no part of the committee's design to discuss here the therapeutical value of alcohol as a drug. This is a question which, like all others of its class, is open to a wide diversity of sentiment. The sentiments expressed in the replies furnished in the reports, satisfactorily show that the best interests of the people in regard to the abuse of alcoholic drinks, may be safely confided to the discreet and conscientious judgment of our medical men.

THE SORE THROAT DISEASE.

Read before the North Western Medical Association, at Forest, Dec. 3, 1874.

By J. H. Williams, M. D., Ada, Ohio.

The distinguishing character of this disease consists in the dryness of the throat, in its primary stage, which may last for days or even weeks, attended with a dry hacking cough, chilly sensation, followed with more or less febrile excitement; pain back of, and down the carotid region of the neck, within and back of the ear, down the dorsal region of the back; enlargement of the submaxillary and cervical lymphatic glands and sympathetic ganglia of this region; occasional nausea and vomiting, and pain in back part of, or front part of. the head, etc. Various names have been given it, as catarrhal, lung and spinal fever, diphtheria, rheumatism, etc.

It is not my intention to give it a special name at present, but to give the physiological phenomena arising from the parts involved, with the direct *causes* of these phenomena. A name for a disease amounts to nothing, if we are familiar with the physiological action of the parts involved in health as well as in disease; and a rational treatment can be used whether it has or never had a name. The quack is ever ready to give a terrible name to suit his fancy, or practice on the credulity and ignorance of the patient or friends.

I will now proceed to give what I regard as a rational explanation of the phenomena now under consideration. I do this in the absence of book literature, for the works on theory and practice of medicine give little or no explanation of the *cause* of the symptoms in this or any other disease, a defect, that I hope will, in due time, be removed. It is time that medical writers on diseases and their treatment abandon the old practice of relating a lot of symptoms, and naming the disease from a leading symptom, without giving any physiological explanation of the *cause* producing these symptoms.

The derangement in these cases began in the throat or upper inspiratory passages from the action of the atmosphere on the pharyngeal, superior and

inferior laryngeal branches of the tenth or pneumogastric, in connection with the branches of the spheno-palatine, a sympathetic nerve that supplies the larynx, pharynx, tonsils, hard and soft palate, uvula, internal meatus of the ear or eustachian tube, nasal fossa, etc. This ganglionic nerve system presides over all the secreting organs, in following and wrapping every blood vessel of the body with its plexus of numerous fibers, and regulating the flow of blood to all parts, through the action of the cerebro-spinal nerves. When thus acted on, by a foreign or morbid agent, it is disturbed in its normal action, causing the parts to become dry or profuse in secretion, according to the stage of irritation or condition of the parts. This accounts for the dryness of the throat and nasal passages, as also the profuse secretion that follows. This stage often continues for several days or even weeks. The sensation of stricture sometimes felt, in these cases, in the larynx, or upper part of the wind pipe, results from the action of the inferior laryngeal, a motor nerve, and branch of the pneumogastric, in connection with filaments from the submaxillary ganglion. This ganglion, with the cervical ganglia and lymphatic glands of this region are often swollen, a sequence of deranged action of the sympathetic and sensory nerves caused by the morbid agent of this disease.

The aching of the head over the eyes results from the same class of nerves—the palatine—that supply the chambers above the hard palate. It is from these chambers chiefly flows the muco-purulent matter discharged by the nose, and which the ancients supposed to be from the brain. Were this really a fact, and also too that the brain is the seat of mind, there would be a deplorable state of mental imbecility throughout the country. But such was the physical learning of the ancients.

The aching and discharge from the ear result from the inflammatory condition of the throat having extended up the internal tube of the ear and labyrinth, and follows on the same abnormal nerve action. There is also, in some cases, pain along the lower jaw, involving the teeth, gums, border of the tongue, temple, etc., caused by an efferent action of the seventh, from communications of the auriculo-temporal of the fifth auricular branch of the pneumogastric glosso-pharyngeal, etc., with sympathetic branches from the carotid plexus.

The severe pain sometimes felt in the back part of the head, the occipital, is the result of the reflex or efferent action of the tenth pair or pneumogastric. It is this nerve that escapes from the head behind the ear from the jugular foramen of the temporal bone, in company with the spinal accessory that arises from the upper part of the spinal cord of the neck, and passes up between the roots of the cervical nerves. Both these nerves are enveloped with the duramater, one of the membranes of the brain. This explains the tenderness behind the ear, the mastoid process, as also the pain down the back of the neck, and which sometimes causes opisthotonos or throwing the head backwards, as also for the pain down the back, from the fact that it supplies the trapezius muscle that extends to the lower border of the dorsal region, or the twelfth vertebra; although a motor nerve, it communicates with the posterior root of the first cervical nerve, as also with the sensory pneumogastric, and has therefore the properties of a spinal nerve.

The nausea and vomiting that sometimes appear in these cases result from the action of the disturbed pneumogastric that supplies the stomach, and which receives filaments from the epigastric plexus of the sympathetic. When the lungs happen to be involved in these cases, being chiefly of the bronchial character, it is the result of the direct action of the *branches* of the pneumogastric that supplies the throat, and which arouses the action of the main trunk of this nerve and the thoracic portion of the sympathetic.

I have thus given the essential physiological action of the parts involved in this disease. For over two years there has been a continuation of these phenomena, modified by the seasons or thurmal condition of the atmosphere. Its first essential character, in the fall of 1872, was that of influenza, involving the throat and posterior nares, etc. In the spring of 1873, the weather being damp and cold, with prevailing winds from the north-east, the action of the morbid agent was more severe upon the sensory and sympathetic nerves supplying those parts, as also the whole system, and produced a higher state of irritation, or inflammation of the pneumogastric branches supplying the throat, and which was conducted to their origin, the medulla oblongata and floor of the fourth ventricle, which is in intimate relation with the spinal accessory, as before remarked, as much so as a spinal nerve; and having the same envelopment, the duramater, this membrane and the neurilemma of these nerves by direct local inflammatory action, became inflamed, which produced the phenomena called cerebro-spinal meningitis. The opisthotonos, in this stage of the disease, was caused by the spinal accessory, etc.

The pain in the back of the head, or its reverse, that of stupor, was from extended inflammation of the dura and piamater, with the nerves and their envelopment that lead to the medulla oblongata, the very seat of life. This was one of the causes of sudden death in this disease. The other cause of death, asphyxia, was from the closing of the larynx by the morbid condition of the sub-laryngeal and other nerves supplying it.

The above named disease is therefore a sequence of the inflammatory action of the pneumogastric and sympathetic nerves that supply the throat.

Diphtheria is also a result of the same nerve action, modified by the condition of the blood. This is true of all diseases, the blood giving character to all nerve action; or, in other words, there can be no disease without abnormal nerve action, induced by a morbid agent in the blood, or by direct action on the sensory nerve fibre and its envelopment.

VOLCANOES AND EARTHQUAKES.

By J. H. Cox, M. D., West Liberty, W. Va.

In the Nov. number of the CINCINNATI MEDICAL NEWS there is an article by Prof. D. Vaughan, on the Physics of the Internal Earth, in which the causes of volcanoes and earthquakes are discussed. The writer supposes the earth composed of a crust, and an immense centre of melted and burning lava, in which there are floating masses of rock—these masses of rock rising from deep down in the lava, by their buoyancy coming in contact with the inner surface of the earth's crust, sometimes adhere and form peaks, projecting inwards; that other masses of rock, following the same channel, strike these peaks, and by their concussion against them, and against thin portions of the crust, produce earthquakes.

Prof. Vaughan is a gentleman of science, and has no doubt studied these points. We have never made geological science a specialty; but his views appear so chimerical, that we cannot withhold a few remarks.

He assumes that the centre of the earth is a great mass of fire, and that the various volcanoes are its chimneys.

Let us go back to a period when the earth was nebulous matter. This, by some agency, was caused to concentrate, and a globe was formed, many times hotter than melted iron. Through long ages it cooled and formed a

crust. We will compare it to a ball of iron, just from the moulder's hands, with the surface sufficiently cooled to form a crust, and the inner part in a semi-fluid state. Now, in this ball, whatever was of its composition capable of burning when at its highest temperature, would be consumed before it sufficiently cooled to form a crust, and whatever remained would not burn at a lower temperature; consequently after the crust was formed, though the centre might still be a melted mass, it would have no need of chimneys. According to the supposition that volcanoes are the chimneys of a great igneous mass that has remained in the centre of the earth from the time of its formation into a globe to the present, we are under the necessity of believing that the burning process did not succeed, when at its greatest temperature, and that its materials withstood an immeasureable intensity of heat, but readily burn at a lower temperature, when the crust has formed. It argues, that instead of the crust of earth growing thicker, and the volcanic action less, it is being consumed, and a period of volcanic action approaching (when the seas will be let into the centre of the earth) unknown in the history of our planet. But science does not point to such a period of calamity from these causes. Volcanic action is decreasing—many volcanoes have become extinct; the convulsive periods, at which the mountains were thrown up, and continents elevated from the bottom of the sea, are no longer witnessed.

But supposing the centre of the earth a consuming fire, from whence came those floating rocks of Prof. Vaughan? Suppose we take a given space, and fill it with atoms greatly separated, and by a process cause them to condense into a solid; this solid would not be composed in one place of lead, in another of iron, in another of stone, but it would be homogeneous. So would we expect the internal portions of the earth—that is, the unsolidified portion would be homogeneous, and of the same character as that of the whole globe, when it first assumed its form, and we could not expect, coming from its centre, buoyant rocks; or throwing from one chimney, black lava, almost as heavy as iron, and from another, white lava, as light as cork. In that great volcanic region of the Mediteranean, between Sicily and Naples, are found the principal ejections of scoria and pumice, while in some other volcanic regions it has never been witnessed.

When lava is ejected in its hottest and most fluid state, that fluidity does not much exceed that of thin mortar—it runs in great burning channels, and has a tenacity that prevents it from spreading out to great distances. In this lava, Prof. Vaughan claims, the rocks rise by their buoyancy and strike the peaks and internal surface of the crust of the earth. Could we conceive of such rocks being in the centre of this great furnace, how long could they remain as such? They would either be melted down, and converted into lava, or the heat being insufficient, the centre of the earth would congeal, and the fire be extinguished; it would resemble an iron furnace, that has constantly received an undue amount of ore.

But, admitting these rocks, could their concussion produce an earthquake? No more than the icebergs in the Polar seas. Let us take a glass globe and fill it with a viscid fluid, and place in it a piece of cork, and shake the whole together. In this case, it will be found, the cork moves slowly and gently to the surface, and has no tendency, by its buoyancy, to produce a miniature earthquake, by striking against the internal surface of the globe.

By way of an attempted explanation of earthquakes and volcanoes, let us suppose our globe formed with its crust solidified. It has passed through the ordeal of fire, and all it contained that was capable of being consumed at the temperature at which it existed was burnt out. As its cooling advances, chemical action comes in—the carbon, sulphur and other substances, existing in a volatile state in the atmosphere, is brought in contact with

the elements of the earth, and new compounds spring up, as quartz, clay, feldspar and limestone. As the cooling progresses, the crust contracts upon the inner mass, now become smaller from cooling. The contraction causes the crust to wrinkle and break in great lines extending across the globe, throwing down depressions, into which the waters gather, forming lakes and seas, and making elevations, forming mountain ranges; or a continent may spring from the mighty convulsion from the depths of the waters.

A part of the earth's crust now, through chemical changes, has become capable, from its extensive carboniferous deposits, of sustaining active combustion. When it was undergoing contraction, these combustible materials were submitted to an immense pressure at particular points, by which their latent heat was developed, and combustion commenced, forming volcanoes. After these were formed, they became additional causes of earthquakes, in the vicinity of their existence, from water gaining admission into them. Many volcanoes have thus been extinguished, and become lakes of water, of which Papandayang, in Java, and Pic, in Timor, are instances. Also, four leagues from the city of Granada, on the banks of lake Nicaragua, there once stood an active volcano (Monte Memobacko); but many years ago, during a convulsion, it became extinguished, as is believed, by the waters of the lake, and it now contains water, instead of fire and melted lava. From Granada it presents the appearance of being within a mile or two of the city; it raises its mighty cone abruptly from the plain on which it stands; its sides are covered with young trees and luxuriant foliage, and clouds hang upon its summit. About eight leagues from there is Monte Masaya. For many ages, amid a roar as of a great hurrieane, from a crater a mile wide, this angry mountain by day has sent up volumes of dense, black smoke, and by night a flame that is lost high in the clouds. It may be distinctly seen at night, by climbing a ship's mast, from the harbor at San Juan del Norte, a distance of perhaps two hundred miles. Following in the direction of a great chain of volcanoes, about six leagues, to the vicinity of the small town of Managua, we find a crater, not exceeding half an acre in circumference, in which is green water, about on a level with, and of the appearance of the waters of lake Managua. In the mountains, a few miles distant from this, hid in a dense forest, is another crater with water in it. After reaching its summit, which is not of a great height, we descend at about ninety degrees, for half a mile, through a heavy growth of mahogany and other timber, and are suddenly arrested by a great well, walled with rock, perhaps a mile in diameter, and of a depth to make one shudder to look into. Here, in this deep recess, may be seen clear, blue water, as of the sea. No doubt but this volcanoe burnt its way to the Pacific, and its limpid waters rushed in and forever extinguished its fire. Now, if these volcanoes had any connection, it seems reasonable that the same fate would have befallen them all; and it would appear, from the phenomena, that they may be regarded as local fires, and of less general importance, and the great upturning of the strata of the earth be connected with another and more universal cause.

Selections.

THE TRANSMISSIBILITY OF TUBERCULOSIS.

There is no question in modern pathology, human and comparative, fraught with greater interest and importance than this of the probable, nay, certain, transmission of tuberculosis from mankind to animals, and, possibly, from these to the human species. The solution of this problem is not only of urgent importance to sanitary science and the preventive medicine of the future, but so seriously concerns us individually of the present day as to demand our closest attention.

It becomes our imperative duty, then, to ascertain whether we are actually engrafting upon our children the fatal malady of tuberculosis by inadvertently administering to them milk, derived from phthisical cows, as the experiments made by Klebs, Bollinger and others, lead us reluctantly to believe. It appears, also, further that we are all exposed to nearly the same danger of infection in eating the flesh of cattle, when, as not unfrequently is the case, it is loaded with pernicious tubercular matter.

The revival, in certain quarters, of the belief that tuberculosis is contagious, even in the human species, as Morgagni asserted more than a century ago, suggests the reflection whether we, as physicians and teachers, lay sufficient stress upon the great danger of allowing healthy people, especially young children, to associate with those who are consumptive.

We have yet, it is true, a great deal to learn with regard to pathology and comunicability of this disease; but there can be no hesitation in recognizing the importance of the results already achieved by careful experimentation and observation. Startling as the above assertions may appear, that milk and flesh, such important articles of our food, as well as mere cohabitation, may prove media for the conveyance of tuberculosis, yet nevertheless, in the presence of so many important facts, we must yield them our credence. In short, we fully concur with Chauveau, who says: "It now appears proved that the identity of tuberculosis with the other virulent diseases is so complete and so absolute, that we must either recognize its virulency, or deny the existence of virulence altogether. There is no middle place in this dilemma."

And now for our facts. But, first let us see how the authorities agree as to the histological identity of human tubercle with that occuring in the lower animals. A remarkable unanimity of opinion exists upon this point at the present time. Professor Reynal, of the Alfort Veterinary School, stands almost alone in maintaining that the bovine and human tuberculosis are essentially different in their histological features. While admitting that the elements of the bovine tubercle are incontestably identical with those of sarcumatous tumors, this writer, nevertheless, sees proper to separate it from the latter on account of the absence of nutritive vessels, and the determinate volumes, which can never be exceeded by the tubercular new growth. The majority of the authorities, however, appear to take the opposite view; of these, Prof. Schuppel, whohas made an almost exhaustive study of tubercle in general, and particularly that of the bovine species, has unquestionably fully established the absolute identity in structure and development of the cattle-disease with tubercle in man. Accepting, then, the fact as fully established, that human and bovine tuberculosis are identical, the numerous, and apparently authentic and exact observations—a few of which will be given later on—as to the extension and transmissibility of tuberculosis in the different

species, become somewhat startling; but the results of experiments, undertaken by various authorities, with the view of ascertaining whether the disease could be produced by inoculation with, or the ingestion of tuberculous matter, are yet more so. As most of these experiments are no doubt already familiar to many of our readers, we shall do no more than summarize the conclusions drawn from them, excepting a few of the more recent ones, to which, perhaps, as yet, less prominence has been given.

So prevalent was the tradition of the inoculability of tuberculosis that even Morgagni abstained from making autopsies upon the phthisical, and Laennec alleged that he had acquired a tubercular ulceration upon his finger in this manner; yet, strange as it may seem, and despite this loug-noted tradition, it was reserved for Villemin, to establish, in 1865, by actual experimentation, the certain transmissibility of this affection by inoculation. The animals experimented upon where chiefly rodents,—rabbits and guinea-pigs,—and the material, tubercle from the human lung. The number of animals inoculated was large, and tuberculosis, more or less extensively developed, constantly resulted. No matter in what part of the body these inoculations were made, the tuberculization that followed was marked by the same serious characters in all, many of the creatures dying after a variable period, and others, falling into a state of marasmus, were killed. The lesions noted in them were chiefly found in the lungs, which were more or less infiltrated with tubercles; but other organs and textures were not exempted,—the spleen, liver, bronchial and mesenteric glands, etc., being also involved in many cases. Experiments were also made upon ruminants and carnivora (sheep, dog and cat), but the results with these were generally negative; though a few of them, so inoculated, were found with the characteristic gray granulations and cheesy deposits in the viscera. Villemin also determined by further experiments that the tuberculous matter of animals, especially that of the bovine species, could give rise to tuberculization. From these experiments he concluded that bovine phthisis is identical with that of man. The next step was to ascertain whether the tubercular matter thus produced by inoculation was also capable, like that which arises spontaneously, of being transmitted; or, in other words, whether its virulence was retained beyond the primary transmission. The second generation of tubercular matter was found to have retained all its morbid activity, causing intense tuberculization in an equally short period. Villemin concluded from his experiments that phthisis in mankind was the result of a specific or virulent agent introduced into the organism.

Since the first report made by Villemin, numerous other experimentors have tested the validity of his statements, so that the successful inoculation of the lower animals, with tubercular matter, has ceased to be a novelty. Among these experimentors we find the names of Colin, Vulpian, Lebert, Cohnheim, Frankel, Papillon, Nicol, Roustan, Laveran, Empix, Waldenberg, Wyss, Wilson Fox, and Burdon-Sanderson; of these, the famous papers of the latter, so extensively quoted by English writers, are probably the best known to American readers. All these experimenters succeeded in developing in rabbits and guinea-pigs a disease analogous to tuberculosis by inoculating them with tubercular products (gray granulations, caseous matter, and the sputa of phthisical subjects). It is evident "that the certain result of inoculation of tuberculous matter, of whatever kind, is to produce granulations in the lungs and other internal organs; that these granulations are anatomically identical with gray tubercle, that they become yellow or opaque, and eventually break down into a soft, cheesy material. It is further admitted on all hands that the process is, so to speak, a self-destructive one; that in the act of inoculation a new element is introduced into the inoculated ani-

mal at the point of insertion, from which it is disseminated to all parts of the body through the lymphatics and arterial circulation." This latter statement is not invalidated in the least by the fact that the same effect may be brought about by the use of non-tubercular matter, or the application of irritating setons, or other substances acting chiefly as mechanical irritants.

The results of these experiments seemed, it is true, to lead to views antagonistic to the idea of the specific nature and virulence of artificial tuberculosis; but they have been explained by stating that caseous deposits were first formed at the point of inoculation, or where the seton had been introduced, next in the neighboring lymphatic glands, and that it was the caseous matter thus formed which gave rise to the production of tubercles throughout the economy. This explanation is, moreover, entirely conformable to Niemeyer's theory of the development of tuberculosis in man,—a caseous deposit in any portion of the body (lungs, glands, articulations, bones, etc.) being, above all other things, according to this authority, a predisposing cause to tuberculosis; and if the lungs are so frequently tuberculous, this is because in them oftener than anywhere else this caseous matter is formed. He further pointed out that the infection of the blood does not always arise through a cheesy deposit, as alleged by Buhl, since cases of acute tuberculosis occur in man in which no trace of such a deposit exists. He, with others, believed in a gradual generalization of tubercle through the medium of the lymphatics, while Lebert thought that capillary embolism was always an important factor in the artificially engendered tubercle. Buhl's theory seems, however, to have been generally accepted in so far as experimental tuberculosis in animals is concerned.

Villemin performed a further series of experiments to meet the objections brought against his views, and presents, in an address delivered before the Imperial Academy of Medicine in 1868, some very telling and convincing arguments with regard to the production of tuberculosis by inoculation. In these experiments he sought to realize, in principle, the conditions of a real inoculation,—to wit, a very small wound and an inconsiderable quantity of inoculable matter. Although these conditions were never departed from, tuberculizations, extremely variable in their intensity and generalization, were obtained; every degree being noted, from a few isolated granulations to those startling generalizations in which every viscus was crammed with the tubercular product, a manifest proof that the intensity of tuberculization is completely independent of the quantity of matter inoculated. Observing that the alterations in the lymphatic vessels and glands were far from constant, they often remaining unaltered, and the local tuberculization at the point inoculated was often quite rudimentary, while the viscera of the animal were richly tuberculosed; therefore, says Villemin, the number and extent of the internal lesions have no relation to the local lesions at the seat of puncture.

The transmission of tubercle has been likened to a process of grafting; "but how can such a process explain the myriads of tubercular granules which stud the parenchymatous and serous organs?" asks Villemin. "Grafted tissues continue to live and develop at the places where they are deposited, but they are not reproduced elsewhere in the organism. This theory, at the most, could only explain the development of tubercle at the seat of puncture; and even then the inoculated tuberculous matter, to do this, must be endowed with a very active vitality. But the softened matter in the centre of a tubercle does not even contain any distinct elements; we inoculate only with a *detritus*. How can grafting explain the successful inoculation with sputa,—sputa which has dried for twenty days, as has occurred in our experiments? Does not all this prove that the inoculated

matter acts by virtue of a principle independent of the histological elements entering into its composition?"

The quasi-tubercles induced in man and animals by various parasites, the microscopic appearances of which so closely resemble those of tuberculosis, are discussed by Villemin, as well as the results of injectiors of mercury, tallow, dust, and irritant substances of various kinds, even pus, into the bronchia and veins, and the great difference between them and true tuberculosis pointed out. To confound the former with the latter would be as great an error as to indentify the pustules produced by tartarized antimony with those of variola.

Demet, Paraskev, and Zallonis, of Syra, Greece, not content with their success in transmitting this disease to rabbits by inoculation with the sputa and blood from a man affected with phthisis, performed the unprecedented and not to be repeated experiment of inoculating a human patient, whose history afforded no suspicion of a tuberculous taint, and whose lungs were perfectly healthy, but who was suffering from gangrene of the big toe of the left foot, due to femoral embolism. Amputation of the limb would not be submitted to, and, as a fatal termination was inevitable, a quantity of sputa from a man who had abscesses in his lungs was inoculated in the upper part of the left thigh. Three weeks afterwards, auscultation revealed very slightly increased respiratory murmur at the summit of the right lung, and somewhat prolonged expiration in the subclavicular region. Thirty-eight days after the inoculation, the man died from gangrene; and, on examination of the body, it was found that the upper right lobe had seventeen tubercles in the first stage of development, of a gray color, and very hard. Two granulations each were found in the left apex and upon the surface of the liver. From this unusual experiment, as states Fleming, from whose paper we have freely abstracted throughout, "It is evident that tubercle is inoculable in man himself, for it is scarcely possible that this patient, who was fifty-five years of age, could have had his organs infiltrated with as many as twenty tubercles in the first stage of development only. Had they been naturally developed, they must have multiplied and passed through their regular evolution, especially in an individual predisposed to phthisis. Their limited number, stage, and size, afford a direct relation to the brief interval separating inoculation from the decease of the patient."—R. M. B. *in Med. Times.*

ALCOHOLISM IN THE UPPER CLASSES IN FRANCE.

M. Leudet, of Rouen, has just laid before the Scientific Congress, held at Lille, the results of observations on this subject amongst his own private patients. The first point he drew attention to was the increasing number of cases of alcoholism amongst the upper classes, and the difficulties attending its diagnosis.

Some of the most important characteristics were dyspeptic troubles, ulcers of the stomach, alternately appearing and disappearing, until hematemesis took place, cirrhosis and affections of the liver generally, diarrhea, paralytic affections, gout, etc.

Amongst other facts collected were the two following:—On the one hand, a number of patients, belonging to the working classes, were constantly taking a large quantity of alcohol at longer or shorter intervals, but sometimes increased to a great amount, with bad or totally insufficient food —conditions likely to cause changes in the mucous membrane of the intestinal canal and in the liver.

On the other hand, there was the constant use of small doses of stimulants at very short intervals, with a sufficient supply of good nourishment, occurring chiefly among the better class of patients.

In the latter cases the most obvious forms of interstitial inflammation of the liver were observed, not accompanied by any severe affections of the intestinal mucous membrane.

It was found that the better class of patients resisted the action of alcohol for a much longer time; while the poorest fell sometimes rapidly into a astate of cachexia.

M. Leudet also referred at some length to the influence of climate, and believed that the different changes observed in various countries were due rather to the kinds andquality of alcoholic drinks in use by the different populations.—*The Doctor.*

QUININE IN PERTUSSIS.

By John W. Keating, M. D.

Believing that those more fortunate members of the profession who are placed by circumstances in a position to note the action of remedies in the treatment of epidemic forms of disease, should make public the results of their investigations, I beg leave to add my few drops to the great river of experience.

In the early summer months of this year, while resident physician in the children's ward of the Philadelphia Hospital, I had occasion to see an epidemic of measles and whooping-cough, which diseases occured at the same time and ran their course together. Owing to this fact, and also that, as all know, the children are none of the strongest, the mortality was rather large, —forty per cent. I was much interested, at this time, in the controversy as to the possibility, by medicinal means, of cutting short an attack of whooping-cough, and I availed myself of the uncomplicated cases to test the remedies proposed. From the first, I found quinine to be the most reliable.

The number of cases was large, and, as is usual in a hospital, the number of nurses small, so that I was obliged to abandon the idea of noting the frequency of the paroxysms in every case, and could only limit myself to the few who had their mothers constantly with them, and where the intellectual capacity of the latter enabled them to interest themselves in my experiments.

As an example, I shall narrate one case which was patricularly interesting, as the disease was extremely severe, and was uncomplicated. This child was fifteen months old, had been sleeping with its mother, who was an assistant nurse, in the room with the other children, most of whom had both whooping-cough and measles, and took whooping-cough, the attack of measles being deferred till a later period.

For twenty-four hours the mother carefully noted, by pin-holes in a card, the number of paroxysms. I then ordered one-half grain of quinine every hour during the day, the same dose to be given every two hours during the night. At the end of twenty-four hours I again had the "coughing spells" noted. They had diminished in frequency exactly *one-half.* This experiment was often repeated with the same results, until at the end of a week, at which time the paroxysms were very few, but had not diminished in severity.

As an example of the same result, in an older child, I may mention the case of a girl about fifteen years of age, who came to Philadelphia, suffering from a severe attack of pertussis. The child was particularly annoyed by

the severe nocturnal coughing spells, which nothing seemed to relieve. I placed her upon the quinine-treatment, and the result was really wonderful; I may say that after the first day she coughed but little, and in less than two weeks the disease had entirely disappeared.

In order to avoid repetition, the conclusions which I arrived at are given as follows:

1. That, in most cases, quinine, given in solution, will diminish the frequency of the paroxysms of whooping-cough, provided it will be given in sufficiently large doses.

2. That quinine can be given to children in proportionally much larger doses than to adults, but, that in very young infants it is contra-indicated, as it always causes vomiting.

3. That carbonate of ammonium will in almost all cases relieve the severity of the paroxysms, and consequently should be given in conjunction with quinine, when this indication for its use exists.

4. That the dose of quinine for a child of two years should be at least ten grains daily, in divided doses; it should be watched carefully and increased, if it produces no effect. For a child of twelve years begin with fifteen grains daily, and note the effect of each dose. The drug should be frequently discontinued for a day or so, as it seems to lose its effect.

I merely offer this as the result of observation in one epidemic, for I know that the value of this treatment is acknowledged by some and denied by others.—*Med. Times.*

CHRONIC RHEUMATIC ARTHRITIS OF HIP-JOINT.

By LAMBERT H. ORMSBY,

Surgeon to the Hospital and Demonstrator in the School of Surgery, Royal College of Surgeons in Ireland.

This is a disease that produces at times great deformity in this joint. It has, as is well known, been first accurately described by two Irish surgeons, Mr. Robert Adams, of Dublin, and by the late Professor R. W. Smith; it was formerly called chronic rheumatism of the hip-joint, then morbus coxæ senilis; but the first-named seems to be the generally accepted term in the present day, to denote this peculiar disease. Mr. Adams says, as to the cause of this chronic disease of the hip-joint, he believes little is known. We have heard it frequently attributed to the effects of cold and wet, and an acute attack of rheumatic arthritis of the hip-joint, produced by cold, we can easily conceive may occasionally merge into the chronic affection we wish to describe. We have also reason to think that falls upon the greater trochanter have given rise to the first symptoms of this disease, but in many cases no satisfactory cause can be assigned by the patient for the origin of the affection.

Symptoms.—It generally occurs to those advanced in life, over 50, but may arise sooner—between the ages of 50 and 70, the most common. I have seen it more in men. One hip, or both, may be affected, also other joints in the body. It commences by the patient complaining of great stiffness in the joint, and about the greater trochanter a dull boring pain is felt, extending down the front of thigh to knee; the stiffness is most felt in the morning; if the patient has walked much in the day the stiffness and pain are severe in the evening; there is a limitation in the range of motion, pain is felt when the patient places his full weight on the affected joint, but when the surgeon presses the head of the bone up against the acetabulum no appreciable pain is experienced; the limb is shortened for about two or three inches,

which varies in different subject, but it is more apparent than real, owing to the obliquity of the pelvis, the nates is flat on the affected side, and the muscle appears wasted. When the joint is rotated, crepitus, owing to the grating, can be heard occasionally. A patient so suffering finds a great difficulty, in fact, in some cases it is impossible to bend so much as to touch their toes; the attitude of standing and mode of locomotion are quite characteristic—they stand on the sound leg, slightly bent forward in body, and rather spread the affected limb out, and with a slight bend of the knee, and the mode of locomotion is generally by the aid of two sticks, and is accomplished very slowly and interruptedly, the body slightly bent forward at the hip. The anatomical or pathological appearance in the joint is as follows: the muscles are flabby and atrophied, the capsule is thickened, the synovial fluid is deficient, and if any of the sub-synovial tissue is present, it is very red and vascular, the cartilage of incrustation is removed from the bottom of the acetabulum and head of the bone, exhibiting at times a polished, porcelainous appearance, due to the friction of the two bones against each other; the cotyloid ligament is frequently ossified; the acetabulum is deeper and larger, and forms a deeper cup than usual, with a level brim round the head of the bone, and narrowed so as to make it difficult to remove the head of the bone, when required for examination after death; the haversian gland is completely removed; the ligamentum teres is either ossified or entirely destroyed; the head of the femur is rounded, or depression, or bony ridges, or nodules are seen on its surface; the neck is shortened. Cases of this disease have before now been mistaken for osseous tumour in intracapsular fracture; these little bony deposits may be developed round the acetabulum and capsular ligament. I merely mention this disease on account of the deformity, in order that you might be aware of it and not mistake it for anything else. As regards the treatment it is at its best state but palliative; as yet no remedies are suggested for the purpose of curing it permanently, being a disease of advanced life and one of disorganization and degeneration of the several tissues constituting the joint.—*Med. Press.*

THE CONDITION OF THE UTERUS FIVE WEEKS AFTER DILIVERY.

By William F. Jenks, M. D.

One of the Surgeons to the State Hospital for Women.

An opportunity was lately afforded me of examining the condition of the uterus five weeks after delivery, when the following questions suggested themselves for investigation in the study of the specimen.

1st. From what tissue does the newly developed muscular fibre take its origin?

2d. Is the process of fatty degeneration completed at this date?

3d. What is the condition of the mucous membrane?

4th. How far have the blood vessels taken part in the changes which the uterus has undergone?

After delivery, as we know, the gigantic muscular fibre cells undergo fatty degeneration and are absorbed, and in their place we find myriads of newly created cells, having all the characteristics of unstriped muscular fibres. From what source does this renewal of tissue take place? This investigation is exceedingly difficult, because there are few questions in histology more delicate than the diagnosis of smooth muscular fibre from the spindle-shaped connective tissue cell. The distinguishing mark usually

relied on is the shape of the nucleus, which, in the first, is an elongated oval, with rounded extremities, while that of the connective tissue cell is drawn out into sharp prolongations at both poles. While this is usually true, the exceptions are numerous, and Prof. Arnold, of Heidelberg, who has won especial distinction by his investigations regarding the unstriped muscular fibre, confesses that while the nucleus is generally rounded, still it may be pointed at one or both poles, so that practically this fine theoretical distinction can hardly avail us in studying an individual cell. The fact, however, that muscular tissue is stained yellow by picric acid, while the connective tissue is not affected by this agent, assisted me in the study of this specimen; and I have been led to coincide with the opinion now held by some of the best histologists, that the reproduction is effected through the medium of the connective tissue cell in a way with which we are familiar from the study of the process of repair in other organs, viz: by their proliferation and division, forming thereby indifferent or embryonic cells, which subsequently develop into the unstriped muscular fibre. I have been led to this conclusion from the fact that I can find no evidence of the division of the nucleus of the fatty degenerated muscular cell, while it is contrary to the laws of reproduction to suppose that a cell, itself undergoing death by molecular fatty degeneration, should manifest the highest attribute of life, viz: the production of a new cell endowed with all the marvelous attributes of vitality. In studying the process of fatty degeneration in other organs, we find that the nucleus, although retaining its function and form longer than the protoplasm, does itself in turn succumb, and finally is converted into fatty molecules, which may subsequently be absorbed. The parenchyma of the uterus submitted to me for examination was, however, infiltrated with small round young cells, such as we meet with in the repair of every tissue after injury, to which the name of embryonic or indifferent cells has been given, because they are impressed with the type of the tissue in which they are generated, and are capable, like the cells which we find in the germinal mass or vittelline sphere in the embryo, of development into muscular nervous or osseous tissue. On examining the external muscular layers of the organ, the remains of the old hypertrophied muscular fibre were evident; the individual cells, however, were much diminished in size, and filled with fatty granules; but nowhere else in the uterus was there a trace to be found of the former muscular structure; hence the inference is rendered probable that the process of rejuvination proceeds from within outwards, and approaches completion at or near the fifth week after parturition; and this opinion coincides nearly with that of Heschel, who states that the fatty degeneration and absorption of the old muscular structure is not completed before, nor does it continue after the eighth week. Priestly, in his treatise on the "gravid uterus," writes that the colossal muscular fibres are not found after the third week, the middle coat now consisting of embryonic cells.

The view of Cruveilhier, that after delivery the entire mucous membrane of the uterus is thrown off, so that the inner surface of the organ resembles a stump after amputation, is now generally abandoned, a delicate layer of decidua cells always remaining, from which the reproduction of the new mucous membrane takes place, the process commencing even during the later months of pregnancy. In this specimen the newly-formed mucous membrane was everywhere apparent, except over the placental site, which still projected somewhat above the general surface, the blood vessels filled with the contracted physiological thrombi. The glandular structure was also reproduced in this new lining membrane. This hypertrophy and subsequent degeneration of muscular tissue was not confined alone to the parenchyma of the organ, for the muscular coat of the arteries showed also,

here and there, cells in a state of fatty degeneration, and newly developed embryonic cells.

My attention has been especially directed to this microscopic examination, from the fact that at present the dietetic management of the puerperal state is a question which is being earnestly discussed. I can not but believe that, during the time when this active process of involution is taking place, not only in the uterus, but also in the walls of the vagina, and the ligaments which aid in supporting the womb, while the organ itself is greatly increased in weight with diminished tonicity, a rest in bed for ten days or two weeks, and subsequently a careful return to any active excercise, is plainly indicated. In this opinion I am the more convinced from the fact that in a dispensary practice, where the patients are drawn from the poorer class in society, unable or unwilling to submit to restraint after confinement, by far the commonest form of uterine disease is subinvolution of the uterus after delivery or abortion, with its attending ills of displacements, and chronic catarrhal conditions of the mucous membrane.

These are essentially chronic conditions, slowly developed, depending for their existence on structural changes in the tissues, or rather on the arrest of certain changes which, physiologically, should take place, which are not, however, normally completed until the expiration of a month or more after delivery. Therefore, in estimating the value of any mode of treatment of the puerperal woman, her condition, six months or a year after her confinement, must be the criterion, and not her general health a month after delivery. Even if this condition of subinvolution exists, the physical signs and symptoms are manifested only when the enlarged and indolent organ, engorged in consequence of a sluggish circulation—which is in part due to the implication of the muscular tissues of the blood vessels in this arrested repair—sinks deeper into the cavity of the pelvis. The uterus usually becomes retroverted as it descends, inasmuch as it does not receive the proper support from the relaxed ligaments, vaginal walls, and perineal body, while the mucous membrane, owing to the passive congestion of the blood vessel system, passes into a state of chronic catarrh, and the accompanying disturbances, both local and sympathetic, from this enlargement; structural change, and displacement of the organ, slowly but surely develop themselves at a later period.—*Obstetrical Journal.*

AN EXTRAORDINARY CASE.

The *Irish Hospital Gazette* records an extraordinary case recently brought before the Dublin Pathological Faculty by Professor R. W. Smith, of Dublin University. The disease under which the woman succumbed, whose skeleton he exhibited, was one of rare occurrence, and difficult alike to diagnose, treat, or even name. At the time of her death the woman was forty-five years old. Fifteen years previously she had been sent to jail for some offence, which was probably committed while insane, as shortly afterwards she was transferred to a lunatic asylum. During the first ten years of her residence there nothing remarkable about her was noticed, and she was employed in washing the floors, etc. At the end of this period she ceased to be able to work, and was confined to bed for the remaining five years of her life, gradually becoming more feeble, and dwindling away in stature until she became about one half the heighth she was originally. She did not complain of any pain; her limbs became coiled up in every possible shape, and she seemed gradually to disappear from off the face of the earth.

She died, possibly, from constitutional disease of the osseous system. He (Professor Smith), however, looked upon the condition of the bones not as a disease, but as a manifestation of an as yet unknown diseased condition. Professor Smith had weighed all the bones individually; the total weight of the skeleton (including the cranium) was two and one half pounds, which equalled about the fourth part of the weight of a child at birth. The bones were extremely light, soft, fragile, and atrophied in every respect. The number of fractures was prodigious. The ribs were in a hundred fragments. The head of the humerus was bent; the fibulæ were curved; the thigh-bones and pelvis were huddled up together; and the bones of the vertebræ thinned and worn away across the front of their bodies. The lower jaw was atrophied and broken into three fragments; the base of the skull was cribriform all through; and he (Professor Smith) believed that if the woman had lived longer not a vestige of a bone in her body would have been left. As to the nature of this disease he (Professor Smith) believed that it was identical with rickets occurring in the adult; and although that opinion might appear heretical to some, yet he was glad to find that in the last volume of Trousseau's Lectures on clinical medicine, that distinguished author had expressed his opinion that osteomalacia and rickets were one and the same disease.

BIOLOGY.

On our planet, this is certain, life had a beginning. The geologist has examined into the crust of this earth and traced life from its most simple start, both in number and form, in structure and size, to the flora and fauna of this day, with man at the head of 25,000 genera of vertebrates. The earth is supposed to consist of a central and perpetual fire encased in a molten metallic mass of primitive and unstratified rock. Around this mother rock the crust of the earth has been formed in successive ages of convulsions and revolutions. The crust next to the mother rock, called the Archean age, shows no remains of organic life. The next crust, called the Silurian age, contains organic rocks, in which the lowest forms of organic life, small in number, and simple in construction, are imbedded. There are the algae, representing the vegetable kingdom, some radiates, mollusks and articulates, representing the animal kingdom, which must have lived in water much more salted and thicker than our sea water. One step higher there is the crust or stratum, called the Devonian age, in which fishes, and two higher types of marine vegetables make their appearance. Again one step higher, and we arrive at the Carboniferous age, in which reptiles have left their remains, and they increase upward to the next or Secondary age. Above this we arrive at the stratum called the Tertiary age, and there, for the first time, we meet mammals, dicotyls and palms. There is the beginning of the large animals and trees of our earth's surface, upon which at last man appears, creations last and most wonderful work. The law of progression is well recorded in the rocks, so that we can trace back the history of organic life to its unquestionable beginning on this globe, and read its progressions from stage to stage up to man and his surroundings.

The first and lowest animal, or plant, which made its appearance on this globe, was made up of organic matter which, in its morphotic structure and inherent force, is entirely different from inorganic matter. All organic beings, from the lowest sea-weed to man, are composed of cells, some of which are so minute that they can be examined only under the most powerful magni-

fier. Still the smallest as the largest cell is a thing of its own in morphotic structure and inherent force. Of some of the cells, though by no means of all, we know the form, structure, chemical ingredients and their proportions; but the force which unites those ingredients in those proportions to an organic cell of that particular nature is a profound mystery.

These cells of which all animate beings are made, which form the starting point of every organism, and make up all its tissues and organs, bones, blood, muscles or nerves, root, stem, bark or fruit, are little bags as may be best observed in the cells of the common elder pith or the coarse cells of the orange. The envelope called the cell-wall or membrane contains a fluid or gelatinous matter and some round particles or granules, in which the centre of the cell is formed. These cells are of different shapes and chemical composition not only in different individuals, but also in the different parts of the same body. The long thread-like cells which give the fibrous character to the flesh, do not differ originally from the cells which build up the brain, blood and bone, glands, nerves and arteries. So throughout the whole living organism the cells constituting different tissues have their peculiarities for each, and yet originally all the cells are alike. Without any scientific investigation taste informs us that the various vegetables, and the parts of different animals whose flesh we eat, are composed of different cells in regard to chemical constituents, and yet the microscope shows but one and the same kind of cells. Nature constructs the grape, the orange, the chicken, the pigeon, of cells, made for this very purpose; so the brain, blood, bone, muscle, lung, etc., are composed of cells fit only for this and no other purpose.

The construction of these tens of thousands of chemically different cells, made of the same elements to make up the various kinds of vegetable and animal organisms, and in each organism the different parts, and the parts of parts, fitted together by the *blastema* or *matrix* in the animal, is the fundamental mystery of organic life, for which none of the known forces of nature give us the least account. And yet these cells grow, fill up, divide, live, change perpetually their constituents in the organic body only, and are transformed into inorganic matter as soon as life is defunct. So we have before us unquestionably a series of phenomena most wonderful and intricate, entirely different in kind from all others known to science, and peculiar to themselves only; phenomena which point forcibly to a different agent, for which we have but one name, and this is vital force.

Please, ladies and gentlemen, not to forget the thread of my humble argument. Organic life is a phenomenon entirely different from all others. It is not the complex of the known forces of light, heat, sound, electricity, attraction or mechanical motion, much less of the atomic forces. Where then is the definition of life by our English cotemporaries, Mr. Spencer's included? Evidently nowhere. Life had a beginning on this globe, and all our knowledge testifies that it could appear in organic matter only in the cell or cells. The cell either made itself, which no naturalist will admit, or there must be vital force. Therefore the atomists, hard pressed with the pertinent question: How did the cell come into existence? resort to various dodges and subterfuges. The first is the *generatio equivoca*, which means the production of cells or organic beings from inorganic matter in an unknown manner. In my opinion the argument amounts to nothing. It pushes the question back a little way without changing it. The question would still be, by which force is inorganic matter transformed into organic, the inanimate into animate? and the answer would be again vital force. Mr. Schwann, the father of our knowledge of the cells, denies the possibility of *generatio equivoca*. In France a long and bitter controversy was carried on

on this very subject, with Mr. Pasteur and the academy on one side, Pouchet, Joly and Musset on the other, without any result contrary to Schwann's assertion. In Germany it was Carl Vogt who maintained the *generatio equivoca*, but without any support from the numerous and shrewd experiments to this end by prominent scientists. At last it was finally demonstrated in Pflueger's laboratory, that water boiled a certain length of time, was incapable of breeding infusoria, because the germs were destroyed by heat, showing conclusively the fallacy of *generatio equivoca*. The last of the great scientists in our country, Prof. Agassiz, has shown in one of his last lectures "All life from the egg;" hence this dodge is dead.

Next in order come the monads, the most simple of microscopic organism, mere points of living beings, now considered vegetable spores or germs. Mr. Haeckel refers to a little marine creature, described by Mr. Huxley, and named *Bathybius Haeckelii*, mere little slime bags, supposed to live in the ocean at a depth of 12,000 to 24,000 feet, as the beginning of organisms. The question is, whether those monads, Bathybii and the like creatures, are not organic remains of larger beings which died and dissolved in the salt water. It appears they are. But if they are not, it has no bearing on the main question. Whether any morphotic structure be a monad, bathybius, protoplasm, spore, germ, red snow, gory dew, tree, elephant, or man, it is under all circumstances something different from inorganic matter; it lives, and the question always is the same, by what force? On the contrary, those miniature beings, without any discoverable organism, go far to prove that life is no mechanical problem; it depends on no mechanism; life is prior to the mechanism in which it manifests itself.

Therefore Mr. Haeckel himself is not satisfied with his Bathybian proof, and advances this: "If you do not adopt the hypothesis of *generatio equivoca* (Urzeugung), then at this simple point of natural evolution you must have resort to the miracle of supernatural creation." You see Mr. Haeckel is honest and says the hypothesis of *generatio equivoca* is merely an inductive necessity, as a maxim of natural research, but it is no fact. Yes, yes, Mr. Haeckel, I would add, this is so; without the acknowledgement of vital force as a force of nature, organic life is a miracle.

Mr. Wm. Thomson went beyond Haeckel and advanced another dodge. He admits that organic matter could not at any time originate from inorganic matter, and suggests, the first organic germs may have reached this earth upon meteors or aerolites, falling down upon it, after having traveled through space filled with organic germs; or those meteors may be fragments of a destroyed earth, upon which such life existed.

There are, however, too many objections to this hypothesis. The crust of the earth shows distinctly that life had a beginning on this planet; hence there is not the least ground to maintain that it had a beginning on other planets. If a beginning it had here, there, or anywhere, the question remains precisely the same, by what force? Besides, the aerolites which have fallen on this earth are composed of some twenty well-known elements, mostly iron, all contained in this earth. No new element in them, and but one-third of those which compose our earth. There is no cause whatever that life came with those aerolites which contain no other new element; or that life originated on an earth of twenty elements, prior to one of sixty. Again, all meteoric stones by the velocity of their fall, if by nothing else, are encased in a molten crust, like a coat of varnish, and come in a strongly heated state; so that, if there ever had been any living germs on it, according to Pflueger's experiment, it must have been destroyed long before it could have reached our earth.

No less unfortunate than Thomson's is Mr. Fechner's hypothesis. He

thinks organic matter is its first and original form, from which inorganic matter was prepared, by fire, we suppose, or as coral reefs are built up. Good, Mr. Fechner, I would say, the hypothesis is genial and novel; but we are afraid it proves too much in our favor.

If all matter was originally alive, then vital force was prior to all other natural forces; and our definition of life becomes self-evident. First all atoms were alive, hence all were controlled by vital force; then the atoms died, fire changed them into the inorganic body, then and there the other forces made their appearance, probably as mere reflexes of the vital force. The only difficulty with Mr. Fechner's hypothesis is, no means are left to prove it.

All other dodges of this kind, feeling matter, world's ether, the fall of gelatinous matter, having been declared mythical, we have arrived again at the beginning, what is life? We could close here, and insist on our definition, without fear of refutation from any scientist, as all the other hypotheses and theories prove a failure. But the matter is much too important to have it rest on a mere hypothesis. Let us seek all the truth we can ascertain on this important point, to gain an established principle of biology.—*Rabbi Wise.*

CLINICAL NOTES AND REFLECTIONS.

By William Hunt, M. D.

It has often been said, "How instructive it would be if our old patients were to present themselves to us for examination after ten years or more had elapsed since they were under care."

I am able to report two cases of great interest that more than average this requirement as to time.

In *Hay's Journal* for April, 1865, I gave a detailed account of a case of match-maker's disease, or phosphorus necrosis. I removed the whole of the right side of the jaw, all of the symphysis, and part of the left side. The peculiarities of the case were, that I operated altogether by internal incisions and saved the periosteum by pushing it from the bone with the blunt-edged elevator of the trephine-case. Before the anterior muscles and membrane were detached from the symphysis, the tongue was secured from being swallowed by passing a ligature through it and looping this around the ear.

In November, 1874, a man was admitted into Dr. Morton's ward for this disease in the upper jaw. It was found that he came from the same establishment where my patient was formerly employed, and he was able to give his address. My man was found, and kindly came to the hospital, and was shown to the class by Dr. Morton, along with the new case. He was in perfect health. A new, well-formed, somewhat contracted, firm, and undoubtedly bony jaw occupied the place of the old diseased structure. The man had no difficulty in eating anything. His beard concealed all unevenness of feature, which was not very great. What particularly interested and surprised me was the *shape* of the new part. Instead of there being a mere curved line of hard substance, leading from the condyle forward, there were *ramus, angle, body and symphysis* as though the new bone had been cast into a periosteal mould.

While preparing this article for the *Times*, a man walked into my office with a freedom that *suggested nothing about eyes,* and said, "Are you Dr. Hunt? I have never had a good look at you, and wish to see you. I am here on business and am going away to-night. I owe you much and will

never forget you; *but may-be, you can do something more for me.* Do you remember S—, of Illinois, upon whose eyes you operated at Wills' Hospital in 1858?" "Certainly I do." "Well," said he, "I am the man." Now, I am not going to relate here an ordinary case of successful cataract-operation, but the history is this: S. was the son of a farmer; was fourteen years old, when he was brought to Wills. He was practically blind from birth. There is some discrepancy in statement as to the early condition of his eyes; but, at all events, he had no recollection of ever having seen, He was healthy in other respects; had never been to a school for the blind, but was bright, as people usually are who have to feel their way through the world. Dense white capsular cataracts occupied the pupils of both eyes. There was great nystagmus or oscillation of the eyeballs. The boy was etherized, and I performed extraction, making the corneal incisions with a lance-shaped knife, and removing the cataracts with the fine hooks and forceps of the eye-case.

The bodies of the lenses, if there had ever been any, were absorbed, as the opaque material seemed to be merely thick membranous substance.

The boy did well, the wounds healing nicely; but when we exposed him to light, we found that we had a veritable Casper Hauser to observe! He was a grand confirmation of touch being the master-sense, and the only one by which we originally establish our relations with the external world.

He could have given a direct answer to the question of Molyneux to Locke., "Whether a blind man, who has learned the difference between a cube and a sphere by the touch can, on being suddenly restored to sight, distinguish between them by the aid of the newly acquired sense only?" Locke answered theoretically, "No!" S. answered practically and decidedly, "No!" He obtained no knowledge at first, by the eyes, of shapes, distances, sizes, extension, or consistence of objects; of color, of course, he had no idea. Everything, distant or near, appeared to be striking against him, or to be within him. Restrain his arms and hands, and he stumbled about worse, if anything, than before he was operated upon. Encouragement would cause him to move with care, but he was very much afraid. In fact, his sensations were more painful than pleasant, notwithstanding the good promise of the operation, He had to learn as a babe learns, who, in early life, grasps with equal confidence for the moon or its mother's breast. Its early days are occupied with a constant automatic struggle in correcting, by the touch, the deceit of the eye. By-and-by experience settles the question, and it soon gives up its vein endeavors.

The nystagmus in S. continued, and doubtless added to his confusion of vision. In this condition his father took him home. I heard of him now and then as making some good progress, and then lost all knowledge of him. And now, on the third day of December, 1874, he walks into my office. His sight is good for all ordinary purposes; the nystagmus is gone, he distinguishes shapes, sizes, distances and color without difficulty. He told me he was a long time in learning how to see, and at eighteen he went to school and learned to read with ease.

Dear me! when will people be satisfied? I said at the beginning of this note that he wanted me, if possible, to do something more for him. Well, he said he was a herder in winter on the prairie, and he could not see a horse more than half a mile off, and he would like some far reaching glasses so as to be able to take in six hundred head of cattle at once!

I was fortunate enough to find Dr. W. F. Norris at home. The doctor soon fitted him with the stretchers, much to his delight; and, as the train did not start till evening, he agreed to go to the University Hospital, where he was shown to the class.

Such incidents as these are very pleasant. I wish all that might turn up on the ten-year plan, as the insurance men say, could be so gratifying. I often wonder what becomes of them. May-be it is as well as it is. If another trumpeter were to blow the assembly for our cases, the muster might make us anxious to lay down our own horns.—*Medical Times.*

THE NEW SCRIPTURES—ACCORDING TO TYNDALL, HUXLEY, SPENCER AND DARWIN.

GENESIS—CHAPTER I.

1. Primarily the Unknowable moved upon cosmos and evolved protoplasm.

2. And protoplasm was inorganic and undifferentiated, containing all things in potential energy; and a spirit of evolution moved upon the fluid mass.

3. And the Unknowable said: Let atoms attract; and their contact begat light, heat, and electricity.

4. And the Unconditioned differentiated the atoms, each after its kind; and their combinations begat rock, air, and water.

5. And their went out a spirit of evolution from the Unconditioned, and, working in protoplasm, by accretion and absorption, produced the organic cell.

6. And cell by nutrition evolved primordial germ, and germ developed protogene; and protogene begat eozoon; and eozoon begat monad, and morad begat animalcule.

7. And animalcule begat ephemera; then began creeping things to mnltiply on the face of the earth.

8. And earthy atom in vegetable protoplasm begat the molecule, and thence came all grass and every herb in the earth.

9. And animalculæ in the water evolved fins, tails, claws, and scales; and in the air wings and beaks; and on the land they sprouted such organs as were necessary, as played upon by the environment.

10. And by accretion and absorption came the radiata and mollusca, and mollusca begat articulata, and articulata begat vertebrata.

11. Now these are the generation of the higher vertebrata, in the cosmic period that the Unknowable evoluted the bipedal mammalia.

12. And every man of the earth, while he was yet a monkey, and the horse while he was a hipparion, and the hipparion before he was an oredon.

13. Out of the ascidian came the amphibian, and begat the pentadactyle; and the pentadactyle by inheritance and selection produced the hylobate, from which are the simiadæ in all their tribes.

14. And out of the simiadæ the lemur prevailed above his fellows and produced the platyrhine monkey.

15. And the platyrhine begat the catarrhine, and the catarrhine monkey begat the anthropoid ape, and the ape begat the longimanous orang, and the orang begat the chimpanzee, and the chimpanzee evoluted the what-is-it.

16. And the what-is-it went into the land of Nod and took him a wife of the longimanous gibbons.

17. And in process of the cosmic period were born unto them and their children the anthropomorphic primordial types.

18. The homunculus, the prognathus, the troglodyte, the autochtpon, the tarragen—these are the generations of primeval man.

19. And primeval man was naked and not ashamed, but lived in quadrumanous innocence, and struggled mightily to harmonize with the environment.

20. And by inheritance and natural selection did he progress from the stable and homogeneous to the complex and heterogenous—for the weakest died, and the strongest grew and multiplied.

21. And man grew a thumb, for that he had need of it, and developed capacities for prey.

22. For, behold, the swiftest men caught most animals, and the swiftest animals got away from the most men; wherefore the low animals were eaten, and the slow men starved to death.

23. And as types were differentiated, the weaker types continually disappeared.

24. And the earth was filled with violence; for man strove with man, and tribe with tribe, whereby they killed off the weak and foolish, and secured the survival of the fittest.

PROLAPSE OF THE UMBILICAL CORD.

Dr. George J. Engelman sums up a paper, (*The American Journal of Obteirics*, August, 1874) as follows:—In conclusion, I will sum up in a few words the facts attained and the laws established by the examination of our prolapse cases.

The causes of the prolapse of the umbilical cord have mainly proved to be such circumstances as prevent the complete filling of the pelvic brim, and the close adaptation of the lower segment of the uterus to the presenting part. One of the more important of these circumstances is the shape of the presenting fœtal part itself, and we thus find that foot-presentations are most frequently complicated by prolapse, whereas vertex presentations are least threatened.

The fœtal appendages are of secondary and minor importance: undue length of the cord, its marginal insertion, or attachment of the placenta low down in the uterus, can never be direct causes of the accident; excess of liquor amnii is alone to be feared.

Some stress is to be laid on abnormity in shape and position of the womb, much more upon twin births. More dangerous than any of these is the contracted pelvis, which I have proved by measurements and numbers to be the main cause of prolapse of the funis, directly and indirectly; a fact hitherto generally accepted, but never as yet clearly established. Another such vague general statement, that the prolapse is by far more frequent among multiparæ than among primiparæ, our cases disprove; they show that primiparæ are, comparatively speaking, almost as frequently afflicted as multiparæ.

The law governing the location of the prolapse is of importance, and here for the first time touched upon: it will, I trust, be verified by the investigation of other observers.

The post-mortem examinations revealed only the lesions due to death from the asphyxia, nothing characteristic for death caused by prolapse of the cord.

The prognosis we can give is somewhat better than generally allowed; most favorable for foot-presentations, after these for shoulder and transverse presentations, while vertex-presentations are more dangerous than any; the case being, under all circumstances, more threatening when occurring in a primipara.

In the treatment of our cases the high importance of the postural method has been developed, more as an adjuvant, however, than as a method in itself of dealing with the prolapse.

Version is comparatively the most successful of all operations, and should be more frequently resorted to when any choice of method is given, as in head-presentations: the application of the forceps and reposition of the cord are less to be relied upon; but, whatever may be the course determined upon, it must be borne in mind that the success of all operations by which we seek the preservation of the child whose life is threatened by compression of the prolapsed cord is in a measure dependent upon the judicious use of chloroform, its application to full surgical anæsthesia,

SUBACUTE OVARITIS.

By E. J. Tilt, M. D.

(Transactions of the London Obstetrical Society xv. 1874)

The difficulty of correctly diagnosticating ovaritis arises chiefly from the fact that peritonitis obscures the diognosis by embedding the pelvic organs in a mass which forms, only too often, a hard pathological puzzle. The symptoms may be divided into those known as catamenial and objective.

Although subacute ovaritis may be met with during the whole period of ovarian activity, it is most likely to occur in young unmarried women, from fifteen to twenty years of age, particularly in those who are delicate in body, sensitive in mind, and with proclivities to tubercular disease. When met with in women presenting none of these peculiarities, the patients will be found to have suffered all their lives from menstrual irregularities. Women, suffering from this trouble, complain of habitual pelvic and mammary pain, and especially of a marked aggravation of the nervous symptoms of menstruation, the memstrual flow being usually too abundant, or, as occasionally happens, too scanty. The pain of subacute ovarities is deep seated, persistent, moderate, bearable, extending from the ovarian region to the knee, and sometimes accompanied by numbness, coldness and anæsthesia of the anterior part of the thigh. The pain gives rise to a certain degree of hesitation in the patient's movements, since she has learned to know that a sudden motion will increase it. Firm pressure on the ovarian region increases the pain and the peculiar nausea which not unfrequently accompanies it. The pain somewhat subsides soon after menstruation, only to reappear, however, a few days before the next period. It is not relieved by a free flow of the menses. Menstruation is preceded and accompanied by a marked aggravation of the usual mammary symptoms of that period, the breasts being swollen, painful and hot. Hysterical phenomena may also be present.

A vaginal examination will often throw a great deal of light on the case, even if it does not finally settle the diagnosis. The left hand should forcibly depress the ovarian region, while the two first fingers of the right hand examine, *per vaginam*, both sides of the body of the uterus. A forcible inclination of the cervix uteri to the side on which the disease is supposed to exist, stretches the connections of the fundus uteri and the ovary to such a degree as greatly to increase the pain. Sometimes the ovary descends into Douglass's pouch, where it can be felt as an ovid body, about two inches long, either more or less fixed by peritonitis, or fleeing from the finger, only, however, to return, as by a kind of ballottement. This body, when siezed, will be found to be semielastic and peculiarly sensitive to pres-

sure. A combined rectal and vaginal examination will often be found of great service in making out the diagnosis.

As regards treatment, a well appointed hygienic course for menstrual and inter-menstrual periods should be advised, combined with a tonic treatment. Six leeches should be applied to the suspected ovarian region, which should subsequently be painted with oleate of mercury for six weeks, after which counter irritants may be used.

In all cases where uterine disease coexists, it should be carefully treated, since it will be found impossible to relieve an ovaritis while a disease of the uterus is allowed to continue unheeded. In these cases, in addition to the above treatment, an injection should be ordered twice a day of acetate of lead. Not unfrequently, in these cases, marriage will be immediately followed by a severe attack of uterine inflammation.—*Med. and Surg. Journal.*

WOMAN'S NATURE IN THE WAY OF PROFESSIONAL ADVANCEMENT.

I will give one instance, which is a type of character, and shows how sympathy and natural feeling may interfere with professional advancement.

The wife of a practising physician, being of a scientific tendency of mind, acquired a theoretical knowledge of her husband's profession. The husband died, and left the widow poor and with several children, some of them so young as to demand much of her time and thought. She continued the study of medicine, with the design of making it the means of support for herself and children. To this end she attended lectures at a woman's medical college. Before she obtained her diploma, an old, super-annuated Presbyterian clergyman excited her sympathy by his forlornness. She gave him a home in a very womanly way—she made him her husband. Here was a double burden—an old man, and little children. This physician, although laden, with her great, womanly heart, was prosperous in a small way. She secured the position of house-physician in the hospital connected with the college, with a small salary, and with sufficient time to attend to private patients. Her pecuniary prospects were better than those of young physicians of the other sex. The husband soon died. At this point in the history occurred an incident which seems to me to be phenomenal and yet is typical. A second old clergyman, equally forlorn and wretched as the first, accepted the charity of this woman by becoming her husband. Her practice slowly increased; her children were well clad and well educated. A daughter married, and moved, with her husband, to a distant city. A son studied medicine, and the last husband died. The next act in this singular history reveals an intensity of maternal feeling entirely opposed to a business success in a difficult profession. Gifted with a fine mind, as thoroughly educated in her profession as the majority of medical men, with good health, and, having reached that time of life when she was functionally at rest, and with every encouragement to remain at her post, yet she made a better mother than a doctor. She resigned her position in the hospital; abandoned her private practice; and moved to the city in which her daughter resided, in order to be near her child and grand-children—and there, in a strange community, recommenced the difficult occupation of a female physician. This history is truly a physiological study, and reveals the intensity of feeling which may exist in all women upon subjects which lie near the heart.—*From the "Relations of Women to the Professions and Skilled Labor," in Popular Science Monthly for February.*

AMPUTATION OF THE UTERUS.

A case of amputation of the uterus was reported by Dr. Sinclair to the Dublin Pathological Society (*British Medical Journal*). The woman was 36 years old, and exceedingly feeble, presenting the appearance of malignant disease. Her sufferings dated from her last confinement, eight years back, when, under charge of a midwife, the placenta was retained two hours. Ever since that time she had suffered hemorrhages and leucorrhea, with great pain and sense of weight in the pelvis. Examination revealed a tumor occupying the vagina, which was determined to be the uterus partial y inverted. The handling of the parts was followed by much pain and hemorrhage. Amputation was resolved on; the woman's condition gave but little promise of recovery from the operation. The tumor was snared with a strong whip-cord, by means of a double canula, and the cord drawn tightly so as completely to strangle the uterus, "at once and forever." Considerable bleeding followed, but it soon ceased. She was placed under the influence of opium with perfect rest and a milk diet. The ligature was tightened twice a day. Warm poultices were kept on the abdomen. On the fifth day the tumor was in a state of decomposition and its removal was determined on. By means of a vulsellum it was drawn down; the fingers of the left hand were passed along the canula posteriorly till they reached the furrows caused by the tightened ligature, and a little below this the mass was removed with the uterine scissors, excepting a very small portion. The canula was removed but the ligature left. In three days it came away with the small remaining portion of the tumor. From that moment the woman made rapid progress; in ten or twelve days from the removal of the uterus she was sitting up, and in less than two months she was completely altered in appearance. She was in good condition, comparatively fat, had a good color, looked much younger, was cheerful and happy. She left the hospital in perfect health.

TREATMENT OF ACUTE & CHRONIC BRONCHITIS AND ASTHMA.

Dr. W. H. Spurgin writes to the *British Medical Journal*, that he has tried iodide of potassium in the treatment of these maladies, in over one hundred cases, with almost invariable success; in fact, with such success that patients have expressed themselves by saying, "it has acted like a charm;" others have said that no medicine ever had any real effect upon their complaint before. Iodide of potassium has a marked effect upon the breathing, reducing the frequency of the respirations, perhaps overcoming spasms. Almost after the first dose patients have stated they have felt the medicine touch their complaint.

He usually prescribes it with carbonate of ammonia, and, when the cough is very troublesome, adds tincture of belladonna and ipecacuanha wine.

In one case of very severe broncho-pneumonia he tried iodide of potassium, with tincture of hyoscyamus and ammonia, and the respirations were quickly and astonishingly reduced from forty in a minute to less than half that number.

He adds, in conclusion, that he has purposely given a mixture containing ammonia, belladonna, ipecacuanha wine, spirit of sulphuric ether, etc., without iodide of potassium, without finding much benefit; after which he added iodide of potassium, and found the patient relieved almost at once.

He confidently recommends iodide of potassium as the remedy in these troublesome complaints.—*Druggists' Circular.*

Proceedings of Societies.

CLARK COUNTY MEDICAL SOCIETY.

January Meeting.—W. G. BRYANT, M. D., Pres.; ISAAC KAY, M. D., Sec.

The Clarke County Medical Society held the regular session at their rooms in Springfield, on Thursday afternoon, commencing at 2 o'clock, Dr. Bryant, President, in the chair.

Members present, Drs. Banwell, Bryant, Carroll, D'Richey, Dougherty, Kay, McLaughlin, Pollock, Reddish, Reeves, Rice, Rodgers, Senseman and Totten.

Dr. SEYS reported a case of ulceration of the uterus.

Dr. BANWELL reported a case of granular paryngitis more than twelve months standing, The digestion in this case was bad. Treated with bismuth, iodide of potassa, and other alteratives of that class. Dr. Banwell's case was discussed by Drs. Seys, Reeves, McLaughlin and Kay.

Dr. RODGERS reported a fatal case of convulsions connected with the puerperal state. There was a uremic condition of the system. This case was further discussed by Drs. Seys and Reeves.

The following resolution was then taken up for consideration, viz:

Resolved, that the code of ethics of the American Medical Association is in perfect harmony with the spirit of liberality which characterizes the present age.

Dr. McLAUGHLIN remarked that he could have but little to say upon this resolution, unless some one attacks the code of ethics. He had no objection whatever to that code.

Dr. SEYS did not believe that the American code, as it now stands, fully meets the demands of the times in the government of the medical profession. It hampered rather than facilitated the progress and welfare of the medical practice. He objected to Section 4 of Article 1, defining the duties of physicians to the profession at large. This section will not permit a physician to inform the public what he is able to do. Whilst the quack is advertising his remedies and his abilities, the regular doctor, who has spent a fortune in obtaining a finished education, and who may have visited all the hospitals of America and Europe in order to qualify himself for treating disease, is not allowed, by this section, to put a line into the newspapers, intimating that he is thus qualified. The section is life to the quack but death to the poor honest physician. It is life to the quack because it keeps all men of real skill from competing with him in advertising his abilities. One of the ablest physicians in America was expelled from the American Medical Association for advertising that he could cure Syphilis. This was wrong and oppressive.

Dr. McLAUGHLIN said that the American Medical Association did right in expelling the celebrated physician of the east, just mentioned. If that doctor had superior knowledge of this disease, it was his duty to have made known his remedy to the medical world. Most probably he did not have that knowledge. A man who acts upon the highest principle is willing to do the greatest good to the greatest number. He did not believe in secret nostrums, nor in flaming advertisements. It had been urged that a true gentleman did not need a code. That might be true, and yet it argues nothing against a written code, setting forth the proper rules to be adopted in governing physicians. The code can be violated without saying a word.

A glance of the eye, a contemptuous gesture, or sneer, with no accompanying words, may inflict a great wrong to a professional brother, by breaking down the confidence of his patient. All of these violations of good fellowship should be provided for in a code, whether men will bear or forbear. If the door for advertising were thrown wide open, there would be no limit to its extent. It would require a great deal of space in the newspapers for every doctor to set forth his special claims to the popular favor. This kind of literature would leave scarcely any room for other matter in our papers. A doctor might have nothing to offer the public, except a colored solution of common salt for the treatment of catarrh, and he might push the claims of this remedy by advertisement to a ridiculous extent, saying that no other doctor in the world knew of the valuable secret, and yet without this section of the code, so facetiously objected to, nothing could be done by a medical society to affect his standing in the profession.

Dr. CARROLL remarked that it would be well to define what the code is, and, also, what is meant by the spirit of the present age. Dr. C. spoke particularly of the duties of physicians in consultations. It should be remembered that medicine is a liberal and learned profession. Every age has been characterized by diverse spirits. During the early history of medicine in the Roman empire the spirit of *war* prevailed. During the middle ages we had the spirit of *superstition*; but in this age we have the *liberal spirit*. A man who has risen high enough to live in the liberal spirit of this age, may perhaps need no code; but if he do need a code, he will find a sufficiency in our code as it stands. A man may be a true gentleman and yet need a code in order to instruct him in regard to the proper course to pursue.

Dr. RODGERS said that when this resolution was brought up some of our members became alarmed lest the medical profession should suffer by the discussion. It should be borne in mind that every set of rules adopted by men have been found imperfect, and that they had to be changed somewhat. We should not entertain a superstitious regard for instruments of this kind. In respect to our present code, Dr. R. was not sure but that larger liberties should be allowed to physicians by way of advertising. He believed that members should be allowed to advertise such specialties as that of oculist, or men who treat disease of the chest or throat should be allowed to publish the same by card or otherwise. He thought that the third Section of Article 1st was not fair to the young practitioner who wishes to practice a specialty. It offers a premium to the lazy members of the profession, by denying the studious, industrious, and skillfull young man from making his abilities known. Dr. R. thought that any man who holds a useful patent should have the priviledge of selling it as a patent, and of realizing all the money from it that the instrument is worth to the public. The cases of the men who discovered ether and vaccination were ably discussed, as showing the manner in whieh the code sometimes works oppressively to the deserving. Dr. R. then remarked that some improvements might be made to the section pertaining to consultations. A more liberal course should now be allowed by the code. Humanity to the sick may require us ocasionally to vary from the letter of the fourth article. Under some circumstances a certain kind of recognition should be made of irregular practitioners. Dr. R. alluded to many instances in which such recognition should be made. The immediate relief of some suffering fellow-being may demand co-operation with even a homeopath, who may happen to have the case, and who may call upon a regular physician for assistance.

Dr. KAY wished to give his cordial adherence to the National Code of Medical Ethics as it is. He did not believe that much improvement could be

made upon it. The document is plain, complete and comprehensive, setting forth clearly and unmistakably, 1st. The duties of physicians to their patients, and the obligations of patients to their physicians. 2d. The duties of physicians to each other and to the medical profession at large; and 3d. The duties of the profession to the public, and the obligations of the public to the profession. Under these grand divisions of our code we have eleven articles, which are again sub-divided into fifty sections, and in those we have limned out every duty and obligation arising from the relations existing between physicians and patients, between physicians themselves, and between physicians and the public at large. The principles upon which these duties and obligations rest, and the manner in which they are to be discharged, are essentially the same as those contained in the Scripture "of doing unto others as we would have others do unto us." The gentlemen who drew up the American Code of Medical Ethics have done their work with masterly hands, for in all the history of this instrument we have never heard of any alterations having been made in its structure. When we consider the firmness with which it has stood for so many years, notwithstanding the searching criticisms to which it has been subjected, and the severe tests which have been brought to bear upon it, all of them calculated to reveal its weak points, if any there be, we are forcibly impressed with the correctness of its principles and the adaptedness of its rules to the object intended. We could not have selected a task more difficult, than the laying down of rules for the government of physicians under all their peculiarly complicated and perplexing relationships in life. And especially would it seem a hard undertaking to furnish a code which would receive such almost universal and unquestioning recognition as the system of ethics adopted by the American Medical Association has received for the last quarter of a century. We do not claim that physicians, as a class, are to be held up as models of peacefulness and of brotherly kindness, but our point in this discussion is, that in no case is discord or misunderstanding among physicians attributable to any defects whatever in the code of ethics itself. We have never heard a physician, who was involved in ethical troubles, assert his belief that there were any such defects. Dr. Kay then proceeded to point out several sections of the code, whose letter and spirit had but too frequently been violated by a few medical men of the regular school in this community, and one of these too a surgeon of some note. The evils which have grown out of these violations tend but to demonstrate the justness and correctness of the rules themselves. These evils are continuous and far-reaching in their nature; for although the parties complained of have, as a result of their course, forfeited their membership in the Clarke County Medical Society, and have thus assumed the position of outsiders, yet the medical faculty of this city and county occasionally feel the jar of discord and contention resulting from their defection. These parties having withdrawn themselves from the restraining influence of a wholesome code, and well knowing that they are now beyond the reach of disciplinary power, feel themselves free to conduct a kind of guerilla war-fare upon their professional brethren within the regular ranks. These men seek, and are now to a certain extent enjoying the protection and the advantages of good society, without subjecting themselves to the duties, obligations, and responsibilities imposed upon them by such society. The full and hearty professional recognition of such persons, while in their abnormal position, is but offering them a premium for the course which they are pursuing. We should not only apply sound criticism in examining the merits of our code, but we should try to live up to its requirements, for they are just and reasonable.

Without having time to take any further action upon the subject, the

society, after a session of three hours, adjourned to meet again on the second Thursday in February.

Microscopy.

ON THE USE OF A V SHAPED DIAPHRAGM.

Read before the Memphis Microscopical Society, January 21st, 1875.

By J. Edwards Smith, Ashtabula, O.

Some weeks since, when engaged in testing the extreme apertures of several objectives (including a 1-6 and 1-10 immersions, Tolle's new 4 system formula), I used, for the purpose of cutting off the central ray, a simple piece of japanned iron plate—the ordinary ferrotype plate used by photographers.

The usual diaphragm box and revolving plates were removed, leaving the under side of the stage entirely unobstructed; the piece of ferrotype plate was fastened by a screw near its edge farthest removed from the illuminating lamp, so as to entirely close the "well-hole" of stage. Now, by *bending* the ferrotype plate it was easy to convert it into a ∢ shaped diaphragm, with its open side adjacent to the mirror—and the included angle formed by under side of stage and the ferrotype plate depended entirely on the disposition (bending) of the plate.

While using this rude and simple apparatus, with an objective of 170°, the ferrotype plate making an angle of 20° with under side of stage, the illumination being furnished by a German "student's lamp," I was surprised to find that I got strong views of transverse striæ on No. 18 of the Moller Probe Platte, the same shell having utterly defeated the objective named on any previous occasion. Since I have made numberless experiments, using a variety of wide angled objectives, and find the ∢ diaphragm of singular advantage when resolving severe tests.

As to the percentage gained by the use of the diaphragm, I hardly know —and this will probably vary with the objective used. I detail a single experiment, and leave others to form their own conclusions.

With the Tolle's 4 system (1-10 immersion), German student's lamp, and using aperture, say of 160°, *without* diaphragm, I usually see a. pellucida in Moller Probe-Platte (No. 20), exhibiting transverse striæ in *patches*, and strongest near the ends of valve; turning the diaphragm into position and so as to include angle of 20° with under surface of stage, and little, if any, change made in the illumination, I now get easily a strong "*striæ*" of transverse lines, and evenly distributed from end to end of the shell. Similar results obtain when viewing Nos. 18 and 19 on same Platte. This much for work with oblique light.

Another fact is perhaps of still greater importance. The diaphragm may be bent so as to include any angle, say from 5° to 50°, with lower surface of stage. We will assume, say an angle of 45°. Now, by a proper disposition of the radial arm carrying the mirror, arranging so that the diaphragm "splits" the illuminating beam, *i. e.* one-half entering the wedge-shaped aperture while the other half is excluded, a beautiful effect of black shadow illumination will at once be recognized, and the intensity of the shadows are easily graduated at the will of the observer, in two ways; 1st, by a simple movement of mirror; and 2d, by combined movements of mirror and diaphragm. The effects thus obtained are innumerable and within the reach of any intelligent observer.

This black shadow illumination gives promise of real value to those engaged in advanced investigations of structure, in fact, it will be found to be a new power. This simple and rude appliance has for weeks been a *permanent fixture* to the stage of my instrument, and the ferrotype plate seems to bear any amount of bending. Its functions are obvious, the iron plate simply shutting out rays more or less diffused. This little bit of a "fixing" constitutes, with the mirror, all the "sub-stage apparatus" I have any use for.

As your Secretary, Mr. Dod, has recently purchased a wet new system Tolle's 1-10, it may be of interest to add a few words as to the test of aperture of the new 1-10.

Place the slide *below* the stage and gradually contract the opening of the ferrotype plate until it almost contacts the under side of slide. It will be found that the "*last and least light*" gaining access to the object will give a well defined image, proving beyond a doubt, if these objectives have not an angle of 180°, that they approximate *extremely close* to the claim set forth by their maker, sufficiently close to win the admiration of the frank and candid observer.

DIAGNOSIS OF RED BLOOD CORPUSCLES.

In the December number, 1874, of the MEDICAL NEWS, we gave an outline of a paper by Dr. Joseph G. Richardson, of Philadelphia, in the *American Journal of Medical Sciences*, "On the value of high powers in the diagnosis of blood-stains," in which was affirmed the possibility of distinguishing the blood of man from that of the pig, ox, cat, horse, sheep, and goat, by the measurement of the red blood corpuscles, even in dried stains, such as the microscopist is called upon to examine in criminal cases.

In the January number of this year, of the same journal, Dr. Woodward, of the U. S. army, controverts the ground taken by R., and by the relation of experiments, instituted by himself, shows the fallacy of it. At the outset of his article he says:

"I must entirely dissent from this view of the matter (that human blood corpuscles can be distinguished by microscopic measurements from those of the lower animals, sufficiently accurately for medico-legal cases). I can not forget that on more than one occasion in the past, witnesses summoned as scientific experts have been so misguided as to go into courts of justice and swear positively on the strength of microscopical examination, that particular stains were human blood; and I think the danger that others may do so in the future, to the prejudice of innocent men, is more to be feared, than the possibility that an acquaintance with the true limits of our knowledge on this subject may sometimes be made use of in the unscrupulous defence of real criminals.

"In the instances of the dog it might, at first sight, be supposed, from the estimates of the average diameters of the red corpuscles in this animal and in man, as given by Gulliver and Welcker, the authorities most frequently cited in the modern text-books, that a certain small, but constant and measureable difference existed, which might serve as the basis of a distinction in legal cases. This inference, however, is not only contrary to the facts of the case, but an examination of the original essays of the authors cited, shows that it is not borne out by their observations."

Dr. Woodward quotes from Gulliver, who states that the mean diameter of the red corpuscles of man is 1-3200th of an inch (=.00794 millimetres), while that of the red corpuscles of the dog is 1-3542d of an inch (=.00716

millimetres). Gulliver says: "We are only speaking now of the average size; for they vary like other organisms; so that in a single drop of the same blood you may find corpuscles either a third larger or a third smaller than the mean size, and even still greater extremes." According to this statement, Dr. W. goes on to say, the human red blood corpuscles may vary in a single drop of blood from 1-4800th of an inch to 1-2400th.

Welcker's observations give even less support than those of Gulliver's to the notion, that the blood of the dog can be distinguished from that of man by the microscope. He says: "I have always, both in animals and in man, found the transverse diameter of the blood corpuscles of one and the same individual vary from one-fourth to one-half of the mean measurement; and it appears that all the sizes lying between the two extremes are present in tolerably equal numbers, with the exception of the smallest corpuscles, which occur for the most part singly and at intervals."

Dr. W., after repeated measurements by himself of the blood of the dog, and of human blood, says that he can find no constant difference between them, whether the fresh blood or thin layers dried on glass be selected for measurement. The mean of fifty corpuscles, taken at hazard, is seldom twice the same, and sometimes that of human blood, sometimes that of dogs' blood is a trifle the largest.

In arranging for these measurements the effect of the screw-collar adjustment of the objective on the magnifying power was taken into account. This was done in the following manner: some blood being placed under a cover of certain thickness, the best adjustment of the screw collar for definition was fouud by trial. An uncovered stage micrometer was then temporarily covered with another cover of the same thickness, and, being duly focussed upon, the desired value was given to the divisions of the eyepiece micrometer by the adjustment of the drawtube, after which the measurements were proceeded with, and the screwcollar was not turned again until they were completed. Hartnack's immersion, No. 13, and Powell and Lealand's 1-16, were the lenses employed.

After giving a number of tables of measurements of the corpuscles of the dog and of human corpuscles, Dr. W. draws attention to the fact that three of the means for human blood are a trifle larger than any of those of dog's blood, and two of the latter are a trifle smaller than any of those for human blood. All the other means for the dog are within the range of the values found for human blood, and the majority of them are each identical, even to the last decimal place, with some one of those found for man. Moreover, he reminds the reader that the variations between the mean diameter, assigned to human blood by different observers are quite as great as the variations recorded by any of them between the blood of man and the dog, or even greater. Dr. Woodward has not himself made systematic measurements of the blood of other animals than the dog. But from Gulliver's detailed measurements he is led to believe that there are several other animals whose blood, even in the fresh state, could not be distinguished by the dimensions of the red corpuscles from that of man. Among the domestic animals he especially mentions the rabbit and the guinea-pig as belonging to this category. To these, besides most of the monkeys of both old and new world, the seals and the otters, we may add the kangaroo, the capybara, the wombat, and the porpoise.

The foregoing remarks and measurements refer especially to the fresh blood of the animals mentioned, and to thin layers quickly dried on glass, as is generally practiced in making preparations of blood for permanent preservation. In such preparations the corpuscles have almost exactly the size they possess in the perfectly fresh blood. But how is it with regard to

blood dried *en masse*, when sprinkled upon weapons, clothing, wood, etc. Dr. Richardson admits in this case that a slight contraction takes place, but evidently regards it as too trifling to interfere with the diagnosis. Carl Schmidt, on the other hand, found that the blood corpuscles under such circumstances contracted to nearly one half of their original size.

Attention is called to the effect of water on the diameter of the corpuscles. Mr. Gulliver has pointed out, that, if water be mixed with blood, the discs immediately become much enlarged and spherical, quickly losing their coloring matter; and yet, if the whole of this be thus removed, after awhile the outlines of the discs, very faint indeed, may frequently be recognized, diminished considerably in number, and apparently quite flat. He relates that some human corpuscles having an average diameter of 1-3429th of an inch, measured only 1-4800th of an inch after the whole of their coloring matter had been separated in this manner. Suppose, now, the case of blood mixed with water and afterwards dried, as for example, in the case of an unsuccessful attempt to wash away the blood while fresh?

Dr. Woodward concludes by saying that no microscopist expert has a right to conclude his testimony without making it clearly understood, by both judge and jury, that blood from the dog and several other animals would give stains possessing the same properties, and that neither by the microscope, nor by any other means yet known to science, can the expert determine that a given stain is composed of human blood, and could not have been derived from any other source.

MEASUREMENTS OF MOLLER PROBE-PLATTE.

By J. EDWARDS SMITH, Esq., Ashtabula, O.

Some twelve months since my friend, Prof. Edward W. Morley, of Hudson, O., at my request, made careful and accurate measurements of his Moller platte (No. 258), and kindly forwarded to me the results obtained. I have cross-questioned pretty severely some of the figures as given by Prof. M., by "throwing down" the images on paper with camera lucida, and comparing the various markings each with the other *graphically*, and find the Professor's results to harmonize very nicely.

In making the measurements Prof. Morley used the superb Houghton and Sims' micrometer, belonging to the Hudson Equatorial. The objective was a very fine Tolle's 1-16. Monochromatic sun-light was also employed.

With pleasure I forward you the results obtained by Prof. Morley, as per table annexed.

I have had occasion to examine several of these Probe-Plattes of Moller, and found them all singularly even as to the "markings." This being the case, the Platte becomes at once valuable as a *stage micrometer*, using the camera and tracing the marking on paper—hence these values would at once be obtained by consulting the table. The whole process is so plain that it is quite unnecessary for me to go through the details. It will sometimes be better to trace several of the markings from the camera, as by example given.

Take shell No. 3 (nav. lyra), and throw, by camera, its markings on paper. Selecting now the lines best tabulated and tracing off the space occupied by *six* of these, the distance obtained should equal the distance similarly obtained from shell No. 1; or we may trace from No. 1 the distance occupied by six hexagons, and dividing this by six graphically, get a more correct result than could be obtained by measuring a single hexagon.

After a little practice the observer becomes expert with the camera, and

will be able to deal with the finer shells. Monochromatic sun-light will now be found of advantage.

Again the observer may sub-divide the distances given by the coarser shells, and thus obtain finer comparison scales, *i. e.* taking the distance already obtained from the tracings of t. favus (No. 1), and with a fine lithographic pen divide this into three parts; each of these parts will represent the 1-1000th of an English inch; all this is plain enough.

Prof. Morley assures me that he can readily measure n. crassinervis (No. 18) of the Platte with his 1-16, *using lamp light.* When we bear in mind the high magnifying power of the T. and S. micrometer, and also the delicacy required for this kind of work, we must regard the measurement of No. 18, by lamp as little less than a feat.

MEASUREMENT OF MOLLER PROBE PLATTE, NO. 258.

		Numbers counted.		Lines in 1-1000 Eng. inch.
1	Triceratium Favus	4	center to center of hexagons	3.06
		4		3.08
		4		3.08
2	Pinnularia Nobilis	14	at edge from center ... top	10.8
		15	" " " ... bottom	10.5
		18	midway from center to end ... top	12.5
		18	" " " " ... bottom	12.1
3	Navicula Lyra	24	from center along axis ... top	16.3
		25	" " " " ... bottom	17.1
		29	short lines between marginal ... top	17.3
		31	" " " " ... bottom	18.5
4	Navicula Lyra	36	from center along axis ... top	25.0
		36	" " " " ... bottom	25.0
		36	short lines ... top	27.1
		36	" " ... bottom	27.1
5	Pennularia Interrupta	20	along edge from center ... top	26.8
		19	" " " " ... bottom	25.5
6	S. Phœnicenteron	44	along axis ... top	33.
		44	" " ... bottom	32.7
		41	along edge ... top	31.1
7	Gramm. Marina	57		36.3
8	P. Balticum	48	near end	32.9
		50	including middle	34.3
		17	longitudinal	31.5
9	P. Accumenata	52	including middle along axis	42.7
10	Nitzschia Amphoryx	46	" " " " convex edge	42.9
		20	" " " " concave edge.	45.3
11	P. Angulata.	47	diagonal near center (angle of diag'ls 58°)	43.8
12	G. Subtil	58		61.7
		80		61.2
13	Surirella Gemma	51	at axis from center	54.8
		48	at edge	51.4
		37	longitudinal	63.5
14	Nitzschia Sigmoidea	63	including middle	63.0
		64	" "	63.3
		64	" "	63.2
15	P. Fasciola.	46		56.5
		42		56.2
		40		55.5
16	Surirella Gemma	16	near middle of length	64.2
		20	" " "	63.0
		20	" " "	64.4
		24	almost half way from middle to end	67.3
		19	nearer to end than middle	70.4
17	Cym Eliptica	35	along edge from center	63.3
		31	(probably was 30—doubtful)	65.1?
18	Navicula Crassinervis	47		82.2
		24		81.1
		37		79.4
19	Nitzschia Curvula	50		84.7
		?	(counted number not given J. E. S.)	84.5
20	Amph. Pellucida	42	counted three times	92.9
		43	" " "	92.7

REMARKS.—It will be noticed that the figures corresponding to the last

three or six shells are considerably below those formerly published; it is, however, probable that the figures above given will not be materially changed. Prof. Morley's determination of a. pellucida, as above given, agrees very well with Col. Woodward's observations.

THE STRUCTURE OF THE MUCOUS MEMBRANE OF THE UTERUS AND ITS PERIODICAL CHANGES.

By JOHN WILLIAMS, M. D., London.
Assistant Obstetric Physician to University College Hospital.

The paper consists of observations made on the uteri of nine women who had died in different stages of the monthly period.

In two of the uteri the menstrual flow had almost ceased, and the mucous membrane was wanting in the bodies of the organs. The muscular fibre-cells were more or less exposed in the cavity, and the meshes formed by their bundles contained glands and groups of round cells.

In one uterus menstruation had ceased three days before death, and the muscular fibres were not exposed in the cavity of the organ, but imposed upon them was a layer of tissue composed of fusiform and round cells. This tissue contained glands. The muscular tissue near the internal orifice was devoid of glands, but nearer the fundus it contained numerous glands.

In one uterus, in which the catamenial flow had ceased probably about a fortnight before death, the layer of superficial tissue was thicker than in the last; and near the internal orifice there was a marked and abrupt distinction between it and the subjacent muscular tissue.

In one uterus the flow had ceased three weeks before death, and the superficial layer was still thicker; and the distinction between it and the subjacent muscular layer was well marked, except at the fundus. The uterine glands were tubular, and arranged in some parts obliquely, in others perpendicularly, to the surface. They were lined by columnar ciliated epithelium.

In two uteri menstruation was imminent, but the flow had not begun. In these the mucous membrane of the body of the uterus was fully developed, and had begun to undergo fatty degeneration. There was a marked distinction between it and the muscular tissue throughout the uterine cavity; it was highly congested.

In one uterus the menstual flow had taken place for one day, and in another for two or three days before death. In these there was extravasation of blood into the mucous membrane, and the latter had been in part disintegrated and removed.

Menstruation appears essentially to consist not in congestion or a species of erection, but in growth and rapid decay of the mucous membrane. The menstrual discharge consists chiefly of blood and of the debris of the mucous membrane of the body of the uterus. The source of the hemorrhage is the vessels of the body of the uterus. The mucous membrane having undergone fatty degeneration, blood becomes extravasated into its substances; then the membrane undergoes rapid disintegration, and is entirely carried away with the menstrual discharge. A new mucous membrane is then developed by proliferation of the inner layer of the uterine wall, the muscular tissue producing fusiform cells, and the group of round cells, enclosed in the meshes of the muscular bundles, producing the columnar epithelium of the glands. —*Ob. Journal.*

PREPARATION OF TISSUES.

If the constituents of the tissues, that is to say, the formed elements, do not form a solid mass, but only a loose texture with larger or smaller interspaces between them, no special preparation is required for their examination. A small quantity is placed upon the slide, and covered with a plate of thin glass. If the formed elements are in too close juxtaposition, a drop of thin fluid may be added. It is to be borne in mind, however, that it is impossible to say of any fluid that it constitues an indifferent medium for fresh tissues of all kinds. In all instances we must be prepared for changes taking place. Among those fluids which are most indifferent, are, the fluid of the aqueous humor, the serum of blood, amniotic fluid in which a little metallic iodine has been dissolved—the so called iodized serum; finally, very diluted solution of neutral salts may be particularly recommended. If the formed elements have been already modified in their chemical characters by the addition of other reagents, if, for example, they have been soaked in a dilute solution of bichromate of potash, or of chromic acid, water alone may be added. Reagents which induce coagulation of the formed elements, and a consequent hardening of the tissues, cause them also to become cloudy. In order to examine such changed elements with any advantage by means of transmitted light, it is customary to apply highly refractive fluids, which, when they penetrate into their interior, render them transparent. The employment of these means has led to very remarkable advances in microscopic art.

The highly refractive medium must be soluble in the fluid in which the tissues had previously been mascerated. Glycerine is a highly refractive liquid of this nature, and it is soluble in water. Tissues can therefore be removed from watery solutions and immersed in glycerine, or, what comes to the same thing, glycerine may be directly employed as a fluid for mounting microscopical preparations. Oil of turpentine is still more refractive, but it is insoluble in water. A tissue can not, therefore, be removed from a watery solution into oil of turpentine. But alcohol is soluble both in oil of turpentine and in water. If, therefore, it be desired to impregnate a tissue with oil of turpentine, it is first removed from its watery solution into absolute alcohol, and from this into the turpentine. In cases where the tissue forms a membrane, it is only requisite to spread it out when fresh; to add a drop of some indifferent fluid, and to cover it with a plate of thin glass. This plan, however, is only feasible when the membrane is not too thick.

As a general rule, fresh tissues are more or less transparent, but after death they become cloudy; when, therefore, dead membranes are spread upon the slide, and are required to be examined with transmitted light, it is necessary, unless they are extremely thin, to add some highly refractive fluid. In the so called parenchymatous organs—as the liver, spleen, and others—in the parts of the central nervous system, and in bones, nothing is usually to be seen, either in the fresh or the hardened condition, so long as the connection of the morphological elements is not disturbed. It is requisite, in such instances, either to tease out small portions with needles, or to cut very thin sections.

* * * * * * * *

The contours of morphological elements, not previously visible, can often be made evident by treating the preparation with certain coloring matters. The principle of this means of research consists in the circumstance that various constituents of the tissues become quickly stained with coloring matters, or combine with them, while others do not. The tissues should

be dipped in the solutions of the coloring agents, allowed to remain in them for some time, and then washed, *ceteris paribus*, the concentration of the solution stands in inverse relation to the length of time required in order that certain effects should be produced. It is therefore advantageous to use very dilute solutions, and to prolong the time of their action. The more gradual this is, the more scope is afforded for exact researches.

Gerlach introduced the method of examination by staining the preparation into practice. His first experiments were made with carmine. At the present time, however, many coloring agents are employed; specimens may be stained with tincture of saffron, with analin, with indigo-carmine, hæmatoxylin and picric acid; and also with nitrate of silver, chloride of gold, chloride of palladium, and perosmic acid.—*Stricker*.

BIOLOGICAL AND MICROSCOPICAL SECTION OF THE ACADEMY OF NATURAL SCIENCES, OF PHILADELPHIA.

January 4, 1875.

Director W. S. W. RUSCHENBERGER, M. D., in the chair.

DR. J. GIBBONS HUNT made a very interesting verbal communication upon the subject of *amplifiers for the microscope*, in the course of which he remarked that from the time of the first observation by the aid of more than two convex lenses, an almost constant effort had been made by opticians to fit in the best intermediate glasses, and yet further improvement in this respect was confidently to be looked for. The amplifier which he had upon the table consisted of a concavo-convex lens, with its concave side turned towards the eye, and so placed within the body of the microscope as to stand at a considerable distance from the objective. This adjustment of position was best accomplished by having the amplifier screwed to the end of a tube arranged with rack-work in such a manner as to traverse six or eight inches, because we could thus compensate for a want of complete correction in the objectives employed.

The advantages obtained by using an amplifier were, in the first place, gain in magnifying power, as could be seen in his microscope upon the table, when with an amplification of only 1800 diameters, afforded by a four-tenth of an inch objective, he had on exhibition the navicula angulatum resolved into dots all over the field, which was apparently more than sixteen inches across. By the aid of an amplifier we also gain a greater focal distance, and an increase of flatness of field.

Amplifiers have been employed in telescopes for the past fifty years, but ten or twelve years ago they were only adapted to microscopes, in this city at least, by one or two amateurs. Subsequently, Mr. Tolles, of Boston, saw them in use here, and on his return home made one, apparently with gratifying success, as he has since kept them in stock. Some few years since, Mr. Dickinson, of New York, wrote a paper upon amplifiers, claiming that by their aid he could obtain a power of 100,000 diameters; but objects thus magnified are visible only as dim shadows, similar to those shown by the solar microscope, quite unfit for data in scientific work. Such amplification, however, may be employed upon diatoms, the resolution of which does not require definition.

Dr. J. G. RICHARDSON inquired of Dr. Hunt whether, in his opinion, the four-tenth objective associated with his amplifier, as he had it upon the table, and eye-pieced so as to give a power of 800 diameters, was equal to his

Powell and Leland's one sixteenth immersion lens, combined with the "A" eye-piece.

Dr. HUNT replied that on histological work the results were not quite so good, but on pleurosigma angulatum he considered them fully equal. The combination of amplifier and objective which he used was, however, a merely accidental one, so that a skillful optician would probably be able to arrange the lenses more efficiently, and thereby enable microscopists to obtain this greater amplification at a much lower cost, and yet with definition good enough for scientific work. Mr. Pigott's aplanatic searcher appeared to be a modification of the amplifier, but had proved so unsatisfactory in his hands that he had entirely laid it aside.

Dr. HUNT also exhibited a beautiful specimen of the protococcus nivalis, or red snow, which he believed had been discovered for the first time within the United States, by Mr. Harkness, of California, who found it growing upon the Sierra Nevada mountains. For a long time it was a matter of dispute whether this organism belonged to the animal or the vegetable kingdom; but from observations made upon specimens brought from the polar regions by Captain Parry in 1815, and which grew in bottles of snow, its vegetable nature had been demonstrated. In the growing stage, this plant is of a green color, and it is only the resting spores which present the brilliant red hue from which it derives its name. Dr. Hunt stated that on examining portions of the protococcus nivalis under the micro-spectroscope he had found that its coloring matter entirely blotted out the violet end of the spectrum, leaving the red, yellow, and orange untouched.

Dr. J. H. MCQUILLEN showed a specimen of muscular fibre from the sheep, which, after the simple method of preparation of allowing it to remain between two of his own teeth for five hours, he had placed in glycerine and teased out with mounted needles, thus obtaining a magnificent view of the ultimate fibrillæ of the muscle.

Dr. J. G. RICHARDSON exhibited a fine specimen of a vertical section from the mucous membrane of the tongue of a calf, mounted in balsam, which at his urgent request had been loaned to him from the Army Medical Museum. He desired to call the attention of members to the fact that each individual epithelial cell, throughout almost the whole thickness of the membrane, displayed its outline and nucleus with perfect distinctness, and that, therefore, the statement made when balsam preparations were last under discussion, that they showed hardly anything, was inaccurate.

Dr. J. G. HUNT exhibited a similar specimen of his own mounted in glycerine, and remarked that, when thus prepared, the epithelial cells were displayed, not shrunken, *but of their full size*, and that those important elements, the connective tissue fibres, were clearly visible, instead of being lost to view as in the balsam preparation.

Dr. RICHARDSON observed that even if the *fresh* glycerine preparations exhibited these delicate fibres more plainly, yet the specimen preserved in balsam displayed the muscular fibre cells with far greater distinctness, and the absolute permanence of objects mounted by the balsam method constituted one of its most important recommendations.

Dr. H. C. WOOD, Jr., stated that the glycerine preparation appeared to be superior to that mounted in balsam, and moved that in order to settle this question, about which there had been so much dispute, these specimens should be referred to a committee composed of Drs. J. H. McQuillen and James Tyson, for examination and report.

Dr. J. G. HUNT exhibited an exquisite specimen of the liver of a common fly, showing with remarkable clearness the arrangement of the hepatic cells and ducts, and stated that he proposed mounting a series of preparations

displaying the structure of the liver from its simplest form in the articulata up to its most complex arrangement in the human organism.—*Med. Times.*

THE SENSES OF BEES.

The senses of bees were the next subject of investigation, and we will give, in brief, the results which Huber reached. The lenses of the bee's eyes are not adjustable; and, though they can see accurately to great distances, they seem blind to objects close by. Bees dart down to the door of their hives with a precision which is generally unerring, but, if, from any cause, they miss the opening, they are obliged to rise in the air, in order to take another observation.

If bees hear—which is a doubtful question, the old-fashioned "tanging" to the contrary—they certainly hear only what affects their welfare. Their sense of taste is also far from perfect, foul ditch-water being often preferred by them to limpid streams, or even dew, and ill-smelling plants having quite as much attraction as sweet ones; it is the quantity, rather than the quality of their food, for which they care. They are also fond of the secretion of the *aphides*, the milch-cattle of the ants.

Their sense of smell is very keen; the presence of honey they detect, even in the most carefully concealed places. Honey-bees often, in scarce seasons, attack the bumble-bees on their return from the fields laden with honey, and force them to disgorge all they have collected. Its presence in the honey bag must have been detected by the sense of smell. The seat of this sense is in the mouth; this Huber determined by presenting successively to all parts of the body, on camel's hair pencils, odors especially repugnant to them. When held near the mouth, the bee started back as if annoyed. On one occasion he mixed honey with camphor, which they especially dislike; by some means they managed to separate and remove all the honey, leaving the camphor untouched.

The sense which seems to be most perfect in these little creatures is that of touch, and that seems to reside wholly in the antennæ. Greetings, caresses, and the communication of intentions, are always effected, by one bee toward another, by crossing their antennæ. It must be remembered that no light enters a hive under ordinary circumstances. "The bee," says Huber, "constructs its comb in darkness; it pours its honey into the magazines, feeds its young, judges of their age and necessities, recognizes its queen, all by aid of its antennæ, which are much less adapted for becoming acquainted with objects than our hands. Therefore, shall we not grant to this sense modifications and perfections unknown to the touch of man?"—*From "Sketch of Huber," in Popular Science Monthly for February.*

MEMPHIS MICROSCOPICAL SOCIETY.

Proceedings of January 21, 1875.

S. B. Cutler, M. D. President; A. F. Dod, Esq., Secretary.

The society met at the usual hour and place, with a large attendence of members, attesting an increasing interest in its objects and proceedings.

Dr. W. A. Edmonds was unanimously elected to active membership, and Dr. J. V. Herriott, of Valparaiso, Indiana, as a corresponding member.

A donation was received from Dr. Chris. Johnston, of Baltimore, con-

sisting of finely preserved specimens of deutzia leaf, cuticle of ladies' slipper, section of lignite fossil diatoms, etc. Also from Henry Mills, Esq., of Buffalo, three specimens of filterings from Niagara river water, accompanied by a brief but interesting account of what they contained. For all which a hearty vote of thanks was passed.

The president, Dr. Cutler, read an account of the microscopical examination of a pathological specimen sent the society from a neighboring city. The case seems in many respects a remarkable one, baffling the best medical skill. And the microscope, although demonstrating that the disease was *not* cancer, as was supposed, fails to discover its exact nature. This account was therefore sent to the Cincinnati MEDICAL NEWS for publication. A paper was also read from J. E. Smith, Esq., of Ashtabula, Ohio, giving the measurement of all the numbers on the Moller Probe-Platte, as made by Professor Morley, of Hudson, Ohio, and compared with his own observations. The *striæ* on *a. pellucida* are by this measurement placed at ninety-two thousand six hundred to the inch linear; being somewhat different from the measurements heretofore accepted as correct. Mr. Smith suggests employing the Probe-Platte as a stage micrometer, accepting the measurements given as fixed and definite. Letters of acknowledgement were also read from T. W. Starr, Esq.. and Henry Mills, Esq.

The president then read his paper on the microscopic examination of water from a pond, "Happy Hollow," of yellow fever notoriety. In this water he found a number of curious and interesting species of infusorial life, and several new and hitherto undescribed forms. This water proved so rich in life that a description of all it contains could not be condensed within the limits of one paper, and a portion is reserved for a future meeting.

A vote of thanks was then tendered the president, after which the society adjourned until the next regular meeting, February 4th.

Book Notices.

CROUP IN ITS RELATIONS TO TRACHEOTOMY, By J. SOLIS COHEN, M. D. Lecturer on Laryngoscopy and Diseases of the Throat, in Jeff. Med. College. Philadelphia: Lindsay & Blackiston; Cincinnati: R. Clarke & Co. 8vo. pp. 78.

This will undoubtedly be found a very interesting work to all practitioners of medicine. The author bases his treatment of the subject on a careful study of the published records of more than 5,000 cases of tracheotomy in croup, performed in various portions of the world; and his conclusions are favorable to the performance of the operation.

"The chief obstacle to tracheotomy," he says, "apart from its infrequent success,—which, nevertheless is as proportionally great as that in many so-called capital operations considered fully justifiable—are certain accidents incident to the operation itself, and the methods of treatment after it." In a subsequent portion of the work he discusses the complications which may arise and the methods of avoiding them.

The author considers that the administration of an anesthetic for the purpose of controlling the child's movements is admissible in performing the operation; but that it should be used with great caution.

We commend this work to our readers.

Editorial.

LONGVIEW LUNATIC ASYLUM.—We copy the following from an editorial in the *Gazette*, of this city, of February 1. Those who are acquainted with the plan of the management of Longview Asylum from the time of its opening, can not help but indorse the justness of the remarks :

"Longview, under the direction of supposed distinguished citizens of the metropolis of the State, has been as barren in all things that can add to the stock of knowledge of mental disease as if it were a mere boarding house, and the citizens have come to expect no more from it than from a a pauper boarding house.

"It is not very creditable to this central city of the United States, which has considerable pretensions in general medical education, that in this, which is called an age of progress, especially in medical knowledge, a great insane asylum, under a direction which has its most eminent citizens to choose from, should not only have yielded nothing to the knowledge of the treatment of mental disease at a time when inquiry is very active in this subject, in the world at large, but should have shown no signs of intelligent inquiry or of interest in the subject.

"After long experience, and after observation of the appointments by the Directors, the public has ceased to expect anything from Longview but the working of a boarding house for persons who have to be watched. The present direction is equal to that, and so is the staff of the asylum. Do our citizens really want any thing more? Can the promoters of the new bill promise any thing more? If citizens with higher than boarding house aims were placed on the board, would they be kept there long enough to work any results? Would the public tolerate it if the board should look abroad for a Superintendent distinguished in this special line?

"The tendency in all our appointments, no matter by what body made, is toward an average, or a level. To select eminent or especially capable citizens for any public trust, seems to be thought contrary to the genius of our institutions. They appear to be made to vindicate the doctrine that one man is as capable as another."

Since the establishment of Longview Lunatic Asylum, any qualifications for the position of Superintendent in the way of scientific acquirements and knowledge of mental diseases, have stood as an insuperable barrier in the way of an appointment. The trustees, by their past action, have afforded every reason to believe that they would not for a moment consider the appointment of any one who could be suspected of possessing any qualifications above a boarding house keeper. In fact, the denser the ignorance of all that pertains to the human mind, both as regards its normal and abnormal working, the better have been the chances of an applicant. Even strict morality has not been insisted upon, providing the individual could exhibit a spotless record of never having been charged with knowing any thing. That these are not reckless statements, we can confidently point to the history of the institution in evidence. The highest conception which the trustees have exhibited of their duty is to "run it" as a big boarding house.

There are confined in Longview about 600 inmates, suffering with every variety of insanity, and yet what has been done there in the way of adding to the knowledge of mental diseases? Not a thing. Not only has nothing been done in the way of establishing anything new, but nothing in the way of confirming or disproving any past theory. It is positively sad to contemplate the vast clinical material that is thrown away in that institution

and treated as worthless. When accounts are read of the ignorant natives of a country being surrounded by vast stores of gold, and entirely unconscious of its value, wasting it or giving it away for the most trifling gewgaws, one is overwhelmed with astonishment at the stupidity; but here we find the trustees of Longview treating as valueless that which is of more value than gold.

But in this way things must continue until the general intelligence, at some distant time in the future, will require a higher conception of their duty on the part of the trustees. In the mean time the trampling under foot of the gold, of what may be truly termed this mine of knowledge, can not be helped. There is an effort being made to reconstruct the Board of Trustees, but we think it very doubtful of its leading to any permanent reform. The large boarding houses of the city will continue to equal the asylum in any contributions to psychological knowledge, and knowledge of diseases of the mind.

We could have more respect for the trustees in "running" Longview as a mere pauper boarding house for lunatics, if they would abandon the pretense of its being a hospital for the cure of mental diseases. As at present managed it is a waste of money to employ a medical man as Superintendent at a salary of some $4000 a year, with his living, and several medical assistants at salaries from $1200 to $1500. A boarding house keeper at a salary of say $600, with his living, would be all that would be necessary. Under this arrangement we feel confident that the institution would lose none of its efficiency as a humanitarian institution, while there would be a great saving of money. The cures would be just as many, for we fancy that the cures that have taken place have been such as have been brought about by the mere restraints of the institution and the self-limited character of the affections. Nothing would be lost in the way of contributing to the general progress in knowledge of mental diseases, for under no circumstances could there be more barren results in this respect than at present.

Hospital Instruction.—The following minutes of a called meeting of the students in attendance upon the clinical instructions at the *Cincinnati Hospital* has been handed us by the Secretary of the meeting. They were published in *Gazette*, *Commercial*, *Enquirer*, and other city papers of Jan. 20., and also in the *Clinic:*

"A meeting of medical students in attendance upon the clinical instructions of the Cincinnati Hospital was held this afternoon for the purpose of taking action in regard to the practice of members of the staff of the hospital forming classes for private instruction, and charging fees for the same, in violation of the legal enactments governing the hospital.

"On motion, F. E. Rosenkrans was elected Chairman, and G. L. Rose, Secretary. On motion, the Chairman was requested to appoint a committee of five to draft resolutions of the sentiments of the meeting. In accordance with the request, the Chairman selected the following gentlemen: G. D. Trembley, W. S. Heady, J. M. Meek, C. S. Kerr, and T. N. Loundsdale. After retiring, the committee presented the following resolutions, which were adopted:

"Whereas, It has recently become the practice with a number of the physicians and surgeons of the staff of the Cincinnati Hospital to form private classes of the studends in attendance upon the hospital for private instructions, each member of the staff, thus forming a private class, charging each student five dollars a month, in addition to the five dollars he had paid for his hospital ticket, giving to such the advantage of being taken through the

wards and examining the patients at their bed-sides, which privilege is not accorded to others who, having paid the advertised price for the clinical facilities of the institution, are not able to pay the exorbitant price required to enter these classes, or do not see proper to do so, having been under the impression, when they selected Cincinnati as the place where they should complete their medical education, that the advertised fee of five dollars for clinical instructions at the Cincinnati Hospital, as in other large cities, where there are medical colleges, covered all the expense of such teaching;

"*Resolved*, That we regard the practice of the members of the hospital staff forming private classes, and charging fees for instruction and for advantages that should be enjoyed in common by all the students who have purchased the hospital ticket, as in the highest degree unjust to students, and injurious to the interests of the hospital, as an educational institution. Medical students are led to suppose, in coming to Cincinnati, that they will enjoy here all the advantages for clinical instruction that could be desired, or that is afforded by other large cities at the usual rates. But in paying their college fees and purchasing their hospital ticket, they find that the latter is but little more than a sort of matriculation ticket, that only admits them within the doors of the hospital building, and that for any real teaching they must pay at the rate of five dollars a month in each of the departments.

"*Resolved*, That we regard the practice alluded to, of the staff forming private classes and charging fees for instruction, which they put into their pockets in violation of the law governing the hospital (see the same), which explicitly states that the staff shall serve without compensation, is undignified in those who engage in it. It exhibits a readiness to take that which does not belong to them not to be expected of men of a high and honorable profession. As a general rule, medical students need all their means to establish themselves in business, when they have completed their studies, and are poorly able to endure such fleecing.

"*Resolved*, That we consider it highly essential that the staff be reorganized. It is an admitted fact that the chief talent is contained in the college faculties, and as a former rule making college professors ineligible for a position upon the staff has been repealed by the trustees, we see no reason why such a reorganization could not take place that would permit a like representation from each of the three regular medical colleges of their most competent teachers, to be selected by their respective boards of Trustees, who would be the best qualified to judge of the qualifications of the members of their faculties, and an equal representation of the profession at large. This is the method now employed in forming the staff of Bellevue Hospital, of New York City, and it is understood that it is entirely satisfactory.

" *Resolved*, That a copy of these resolutions be presented to the Board of Trustees of the Cincinnati Hospital, and that they be published.

"F. E. ROSENKRANS, Chairman,

"Cincinnati, January 19, 1875. "G. L. ROSE, Secretary."

There are in attendance at the six medical colleges of Cincinnati about six hundred students. The highest number claimed to be enrolled on the hospital roll is only *two hundred and seventy four*, *not one-half of the whole number*. The actual number on the seats, at various times, during lecture hours, by actual count, has been *ninety-one*, *sixty-seven*, *forty-three*. What a commentary on the management of the institution! Here is a hospital building that cost a million of dollars, or more—said to be the finest edifice of the kind in the United States, and not excelled by any in the world—full of patients, and has on the seats of its large amphitheatre, during one of its

regular lectures, *forty-three* students, when there are six hundred in attendance upon the medical colleges of the city. In a note, published in the December number of the NEWS, it was stated that the "two doctors, Judkins and Dandridge, are ruling spirits in the hospital board." Is it not about time that these "ruling spirits" were sloughed off, and that men of a higher order of motives were put in their stead?

We certainly sympathize with the students in their grievances. For each student to be compelled to pay each one of the members of the staff on duty (some seven or eight) five dollars a month, besides paying five dollars for his hospital ticket, in order to secure the full advantages of the clinics, is, to say the least, exceedingly unjust. The legislative enactments governing the hospital say, that the staff shall serve without compensation, and the course therefore is plainly illegal. Whatever services are necessary to render the clinical teaching complete it is the duty of the staff to give. They have no more right to occupy other hours for teaching, than the regular hours, and fill the wards with students for private gain, than any of the other physicians of the city who are not members of the staff.

But a student discusses this matter pretty well in a card published in the *Commercial* of January 22, in answer to a card that appeared the previous morning.

"A CARD.

"*Cincinnati*, January 21, 1875.

"To the Editor of the Commercial:

"In this morning's Commercial there is a card reviewing a set of resolutions passed the 19th, by students in attendance upon the clinical lectures of the Cincinnati Hospital. The card admits that all the statements contained in the resolutions are true, but attempts to justify the practice of the clinical instructors in charging students five dollars a piece for each month, for private teaching, stating that it is not at the expense of the public instruction, which is as great, if not greater, at this time than ever before, and equal in amount to that of any hospital in the United States. We beg leave to differ from the writer. Although two hours a day are allotted for clinical lectures six days in the week, yet, since this private teaching has come into vogue, all these hours are not filled—the students not unfrequently being told that there are no cases to bring before them—in other words, in a great hospital of four hundred patients, there is often wanting material for clinical instruction. Who believes it? Is it not justifiable to suppose that members of the staff, having entered upon an illegal course, are endeavoring to make that course profitable? So long as the instructions of the amphitheatre were complete, there would be no inducement for students to enter the private classes.

"We admit that in this country, and in Europe, too, as is mentioned in the card, it is the custom to charge physicians (not undergraduates) for special instruction a fee, who are engaged in cultivating a specialty, as diseases of the eye, diseases of the chest, etc., but such instruction is not given by members of the hospital staff, but by those who are outside, who are specialists themselves. No one claims, and it is not the case, that any of the Cincinnati staff give instruction in any specialty in their private teaching—not any of them being specialists—but the whole of their private teaching is made up of what should enter the regular course of hospital instruction—what should be taught to each and every student who has purchased his hospital ticket and paid five dollars for it.

"But, aside from this, the exacting of fees by the staff is unlawful. The law says the staff shall "serve without compensation," and contemplates no

extra services to be paid for. The whole of the clinical teaching of the hospital is to be rendered without charge; and the law does not contemplate that members of the staff, or any one else, shall enrich themselves on the plea of extra services. The students of Bellevue Hospital and of other large hospitals are taken through the wards without being taxed; and it is in the Cincinnati Hospital alone that the custom of taxing students for extras exists, the writer of the editorial to the contrary notwithstanding. It is to the colleges alone that students are to pay fees. This is plain to any man reading the charter of the hospital.

Now, as the private teaching is not for the purpose of cultivating any specialty, but is general; if there is any need of it, it is because the amphitheatre instruction is deficient, which should not be. Respectfully,

F. E. ROSENKRANS, Chairman of Students' Meeting.

CROWDED OUT.—The usual monthly letter of Dr. R. C. S. Reed to his friend, F. J. Mayer, Esq., has been crowded out this month. We can assure Mr. M. that the Doctor has not forgotton him—we are to blame.

The article of Dr. J. H. Cox, reviewing a communication of Prof. Vaughan in the November number, was received in December, but too late for the issue of that month. In January it was crowded out.

We have a number of articles on hand we must lay over. Our contributors must exercise a little patience. Quite a number of matters are to be considered in making up a journal, as length of articles, variety, etc. etc., and we must be permitted to exercise our own judgment.

MEDICAL STUDENTS IN EUROPE.—Time was when medical students in the United States were considered a disorderly and somewhat lawless set of fellows. Especially was this the case in Philadelphia, when that city was the principal center of medical education. "Virginia Students" were supposed to take the lead in mischief and so gave character to the whole class. But this was fifty years ago and things have changed since that time. Take them all in all medical students are as orderly and well behaved as any class of young men in the country, not excepting students of theology. Rebellion against the authority of the professors is almost unheard of at our medical colleges. In exemplary deportment the students of literary institutions do not approach those of medical schools in this respect. But a European student of medicine is a different character altogether. Disorderly and riotous demonstrations are almost the rule in the European lecture room. At the opening of the session, or at any time when a professor is so unfortunate as to give offense, and this is easily done, the students are in the habit of exhibiting their disapprobation, sometimes to the extent of driving the lecturer from his desk. They have done so recently in Paris in the case of M. Chauffard, whose offense appears to have been that he was the protege of the clergy. In fact it was necessary to close the school in consequence. In the great German schools they behave no better. Even in Great Britain, especially in Edinburgh, the students are not devoid of rudeness in the lecture room, though their deportment is far superior to that observed in the French and German schools. We claim for the medical students of America in general a degree of respect for themselves and their preceptors not to be found across the Atlantic—at any rate not beyond the British Channel. American students may learn many things by going to Europe, but they are not likely to learn good manners or good morals.—*Pa. Med. Journal.*

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Original Contributions.

ACUTE AND CHRONIC INSANE.

From a Report on Insanity, by NATHAN ALLEN, M. D., LL. D., Mass.

The terms acute and chronic, when applied to a single disease, are easily understood; but the more complicated and obscure diseases are the more difficult does it become to draw the lines that distinguish their different stages. It is so particularly with reference to insanity. Its causes are frequently latent and complex, and it is difficult to determine how or when the disease originated. When the question arises at what point of time any disease passes from an acute into a chronic state, not only the nature of the disease and the period of its natural course are elements in deciding the problem, but the suddenness and violence of the attack enter also into the account. And though it may not be easy to understand all the changes or stages through which insanity as a disease passes, it is important to have a correct knowledge of some of its leading facts or features.

The general facts that the cure of this disease by proper treatment is comparatively easy and assured in the first attack or acute stage, but that when it settles into a chronic state it is very difficulty,—almost hopeless,—is an important consideration. Thus, the longer the disease continues, the less and less the chances of recovery. If the proper treatment can be applied in its first attack or stage, it is estimated by some that, taking all cases as they arise, from seventy to eighty per cent. can be cured, and others estimate the rate still higher; but if not treated at all, or attempted unsuccessfully, till the disease passes into a chronic state, it is found, as a general rule, that not more than ten per cent. ever recover. This shows the great importance of prompt and early treatment. Whenever an individual exhibits marked evidences of derangement of mind, not a day, certainly not a week, should be allowed to pass without carrying him to a hospital. Unfortunately, in such cases friends dally and delay, hoping he will yet be better; that it will not be necessary to remove him from home and friends, and shut him up in a hospital. By referring to the reports of these institutions, it will be seen that from one-half to three-quarters of all patients admitted have been deranged at least three months, and many of them for years. So, then, in the case of large numbers, the disease has settled into a chronic form before their admission into a hospital, or before any proper treatment has been applied. Besides, there are cases where such is the nature and character of the derangement at its very commencement that it cannot be cured; it may be modified or improved, but must necessarily continue through life. If the constitution is strong, the disease not violent, and measures are constantly employed to preserve the general health, such insane persons may live in

this state ten, twenty, thirty, or forty years. In fact, after passing through the acute stage, which is always accompanied with greater danger, it is surprising how long the current of life may continue to flow on.

Some general knowledge on this subject becomes necessary in order to understand correctly the material in our lunatic hospitals, and the results of treatment. The recoveries are confined chiefly to fresh admissions, or to the acute stage of the disease. If the admissions are largely made up of chronic cases, the recoveries will be comparatively few. Then, on account of a crowded condition, transfers of patients are frequently made from one institution to another, and these are generally chronic cases. Then, at the Northampton Hospital the inmates are largely made up by removals, from year to year, from Worcester and Taunton. In his last report, the superintendent of the Northampton Hospital says: "Not nine-tenths alone, but nearly nineteen-twentieths of the patients here are incurable. So long as the population of the hospital is of such a character, restorations must be infrequent and limited almost exclusively to a part of the few cases of recent origin annually admitted." Taunton Hopital is filled largely with chronic cases, so that it may safely be stated that eighty to ninety per cent. of its cases are incurable. As the hospital at Worcester receives anually a much larger proportion than the others of fresh cases directly from the people, the percentage of its incurable class is not so large.

It has been estimated by some writers that, taking cases of insanity in the aggregate, as they occur in the community, but little over forty per cent. actually recover, and some eight per cent., in the acute stage, die; so that we have a large residuum of incurables accumulating from year to year. The exact proportion or percentage that pass into this chronic state anually we cannot compute, but it is very large. Let this process be carried on for a series of years, we shall find the disproportion between those classes growing in a rapid ratio. It should be borne in mind too, that a large majority of this class are paupers, dependent for support entirely on the State or town. If we form our estimate on the numbers now found in our state hospital, it is five-sixths; and this proportion of the dependents is more likely to increase than to decrease.

Now, taking this view of the present and prospective character of the inmates of our lunatic hospitals, what is to be the result? Supposing, too, there is no adequate provision for sifting and removing, from year to year, the more hopeless class, are those great hospitals to be filled up with the chronic insane? Are these institutions to be mainly asylums or receptacles for this class? And must the State, every few years, build a large hospital, at an expense of a million or more of dollars? Not only the state, but every city and town, have their representatives in this class to support, and should feel a deep interest in the subject. For several years the hospitals have been somewhat relieved of their pressure by sending chronic cases to the new asylum at Tewksbury, connected with the state almshouse; but as that is full, it cannot heareafter receive so many.

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It is well known that, within a few years, there has been great improvement in medical practice; that the laws of life and health are becoming far better understood in the community at large, and that great pains are being taken to diffuse a knowledge of the causes and prevention of disease as connected with sanitary and hygienic agencies. To such an extent has this knowledge been diffused, that the inquiry is now raised, not merely how to cure, but how to prevent disease. No fact is better established than that a large amount of sickness (estimated at one third) and mortality can be prevented by a proper observance of the laws of physiology and hygiene;

but, to reach this end, the community must first be made acquainted with these laws. Now, how is it with the disease of insanity? What progress has here been made towards its prevention? How much do people at large understand about its causes? How can the increase of this great evil be stayed, unless proper means are employed to prevent it? This can be accomplished only by spreading information in a variety of ways; it may be by the press, by family instruction, by education, by legislation, etc. What advantages have we gained in this respect by all our hospital experience for these many years? More than forty annual reports of the Worcester Hospital have been published, containing valuable facts, statistics and suggestions; but how little practical knowledge or information has been gleaned from these documents, compared with what might have been obtained, for the welfare of the public! A similar remark is applicable to the reports of all our hospitals, however brief their experience.

To illustrate this point, take for example, intemperance, as one of the leading causes of insanity. If, in its various forms, it does, in addition to all its other mischief, contribute largely to this evil, it is high time that it should be generally known, and the warning brought home to all. If ill-health is adjudged a more fruitful source of this malady, let us understand that. If hereditary influences, in all diversified forms, constitute another fruitful source, let us understand better the laws that govern these influences; or, if our own fast living or the high pressure in our educational systems are steadily swelling the ranks of insanity, the sooner these truths are brought home to the public mind the better, and we may then see if the current can not be checked. The first step or stage in any reform is more light, more instruction, more knowledge. And the only way that insanity can ever be checked is by understanding its causes. Though it may be difficult for many persons to comprehend all the phases and causes of insanity, its leading features and principal causes can be sufficiently understood to prevent, to some extent, the disease. It all results, like other diseases, from the violation of some law. Let us inquire what law,—whether physical, mental or moral: where, how or when violated? This knowledge will never be obtained unless faithfully sought.

Let a short paper be carefully prepared, setting forth clearly, in popular style, any one of the above mentioned causes of insanity and the proper directions for preventing it, and then let it be scattered in tract form among the people: might not this have an influence to prevent or check this terrible evil? If a similar course should be pursued in respect to each of the leading causes of this disease, and should be continued from year to year, its influence for good must certainly be felt.

Many persons seem to look upon insanity as developed either by some mysterious providence, or by some hidden causes which baffle human research, so that, in either case, it becomes a necessary part of a high state of civilization: but this is a great mistake. The causes of insanity, though more complicated than those of some other diseases, can be understood and controlled. Insanity, instead of being a necessary part of true civilization, results from its artificial and abnormal developments,—growing out of a violation of those physical, mental and moral laws, which, properly understood and observed, result not only in the highest developments of the race, but in the highest type of civilization.

Let us take another point of view. In what position in society or in what situation in life is one most liable or exposed to insanity? In these reports are found tables showing the number of insane as connected with this class, or pursuing that occupation. For instance, "farmers," take the lead, and "laborers" come next. Now, what is it in farming that con-

duces so much to insanity? and what kind of "laborers," or what the particular work pursued, that has such a proclivity to insanity? Shoemakers, merchants, carpenters come next in order. What is there in these several trades and occupations that exposes to insanity? Then, on the other hand, in what classes or in what occupations are the fewest representatives of this disease? Facts gleaned from these reports, together with other sources of information, would throw much light on all these questions.

What especially is here wanted is, that this whole field should be carefully surveyed, to see if, from this long experience and large repository of facts, some information or knowledge can not be obtained to guide us out of this dark labyrinth of evil and suffering. But this work will never be done, unless some individual or commission makes a business of it,—is charged with this specific duty,—and provision is made by legislative action that it may be continued from year to year.

Moreover, according to the present organization of our institutions and their government, it is impossible to determine whether any progress or improvement, as a whole, is made in the State, from year to year, in the treatment of the insane. It is not sufficient if this or that report is excellent and shows many improvements; there may be defects or short comings in the same hospital, which are passed by unnoticed. Besides, as to the great number of insane living in almshouses and families, if there is any improvement here (which is not probable), we have no account of it. To make permanent progress in this work, and obtain all the advantages that are possible, there must be a living agency constantly gathering up facts, statistics and information from all available sources; and, by analyzing these and comparing them, from year to year, it will then be made to appear how we stand, and what progress, if any, is made in any given time.

As an illustration of what ought to be done, let us take another point of observation. In passing through the lunatic hopitals, and in examining their reports, our attention was arrested by the large number of young persons that had become insane. Taking the three state hospitals, it seems there are admitted annually, on an average, from forty to fifty under twenty years of age; that these institutions contain about one hundred persons under twenty, and that the whole number for the last twelve years must range from eight hundred to one thousand, as Taunton reports three hundred and forty for that period. From inquiries of the superintendents, and an examination of the reports from the origin of these establishments, as to the ages of those admitted, it is evident that insanity is appearing gradually at an earlier age than formerly. The average period at which the greatest number become insane once ranged between the age of thirty and forty; but a careful analysis of statistics shows that this average period is coming at an earlier age,—that in some States or localities it may come between twenty and thirty. What is the cause of this change, or of so much insanity among the young? How are we to account for this increase? There must be causes somewhere for this changes. In a normal and well organized state of society, before the cares, responsibilities and disappointments of life can come upon the young, we should not expect to find among them much mental derangement. Such an unnatural and increased devlopment of insanity indicates something wrong. In middle life we find a variety of causes to account for insanity that can not befall the young. Generally speaking, there is a much higher standard of health among those under twenty years of age, and we do not find those sudden changes or complicated diseases which are often liable to terminate in insanity. With the young there must be, then, special causes, such as wrong habits, a violation of physical laws in early life, a want of proper family training, or too high

pressure in education. Whatever the causes may be, it would seem, if properly attended to, their operation might be checked and the tide turned, or at any rate, that those having the superintendence of youth should be put more upon their guard; but this can never be done without understanding distinctly what these causes are, and how to apply the remedies or means for their removal.

A well known writer upon insanity, in urging the necessity of early hospital treatment in order to effect a cure, remarks that it may "require only one hundred dollars to cure the case; but more than ten times that amount may not be sufficient to support one that it is not cured, through life." How much more forcibly might a similar remark be applied to the prevention of the disease? Here, dollars and cents can scarcely come into the account, compared, on the one side with humen suffering and loss of ife, and on the other, with the possession of perfect sanity of body and mind.

There is another class of facts that it may be proper to refer to in this place. There occur, from time to time, abnormal cases of insanity, which, for various reasons, require very careful and thorough examination. The developments of character are in those cases singular, and difficult to explain upon any known laws of mental derangement. The laws of hereditary descent come manifestly into account in such cases, and have a far more powerful influence upon mental development than has been generally considered. Such, too, is the connection of the functions of the brain or the laws of mind with the development and states of the body, that it is almost impossible to draw the lines between sanity and insanity. In order to reach anything like correct or satisfactory conclusions as to motive and character, a most searching inquiry must be made into all the antecedents, circumstances, conditions, physical and mental, etc., of such cases. Take, for illustration, two instances that have recently occurred in this State: viz., Jesse Pomeroy and Wilfred Fitts. The latter died at the Worcester Hospital this last fall, putting in his case an end to any further inquiry or trouble. These are mentioned as examples of those singular cases. Others may not be so marked, nor create that general interest, But then, anomalous cases frequently occur in different parts of the State, and it becomes a serious as well as puzzling question to decide what to do with them,—whether to send them to a lunatic hospital or to the state prison, or to the workhouse. The investigation of these cases calls for all the experience, wisdom and skill that can be brought into requisition. Both justice and humanity demand this. It is true the laws and the courts now provide for the examination and disposal of such cases; but if the State had a board whose duty it was to overlook and investigate the whole department of insanity, it might furnish, in such emergencies, essential aid. In Great Britain and other European nations such commissions are thus found very serviceable.

There is another class of facts, very important, which may here come appropriately under review. They are usually denominated "accidents," and occur when deranged persons commit serious injury, either by violence to themselves or others, or by destroying their own lives or the lives of others. This may occur when a deranged person is mingling in society at large, or when confined in public institutions. Such occurences create great interest, and should always be impartially and thoroughly investigated by official authority. The law provides for this by a coroner's jury, when they happen in the community. In case of such "accidents," it may be that no one was to blame, and it may be there was gross carelesssness or neglect somewhere, and perhaps abuse. It is well known that there are large numbers of insane persons "suicidal" or "homicidal,"—that their insanity manifests itself particularly in this form, and that they seem deter-

mined to destroy life. And notwithstanding the greatest possible pains taken in the constructions of rooms and in the watchfulness of attendants, suicide is committed in lunatic hospitals. Perchance, the real cause of death is not always reported to the public or to the friends of the deceased, and that it is best it should not be; but no death from snch a cause should ever be allowed to pass without an investigation by some official authority.

But suicides are not the only accidents that occur in our asylums. In Great Britain, it has been found that the larger these establishments become, the greater, relatively, the number of accidents. This shows either a want of more careful inspection, or a lack of fidelity and watchfulness on the part of attendants.

A REMARKABLE CASE OF DISEASE.

By S. P. Cutler, M. D., Memphis Tenn.

A lady, residing in the city of N., in Tenn. of wealth and standing, had been laboring under some incurable disease, supposed to be by her physicians cancer of the stomach, and treated as such for a year or more, without any relief, which finally terminated fatally in the fall of 1874. This case was regarded as a remarkable one, baffling the skill of her physicians to the end, and she suffered intensely. The disease was supposed to be located just over the solar plexus, or great semilunar ganglion.

Some time in October a specimen of something resembling white paper, passed from her bowels, which could not be made out there, and was sent to the Memphis Microscopical Society for examination; several similar pieces had passed at different times. On microscopic examination, I found it to be some animal membrane, though having no homologue in the human organism in the normal state. On comparison under the instrument, this substance was found to be almost exactly homologous to the membrane lining an egg shell, in fact a analogous to the vitelline membrane of the egg. Soon after this, and a few days prior to her death, a small tumor came away from her bowels, which was put into alcohol and sent to the society for examination also.

The tumor is a dirty brown, about two inches in length, an inch wide, and a quarter of an inch thick, crescent in shape, weight about sixty grains, is quite smooth though irregular on surface, with a tag or string like projection, not a regular stem or peduncle. In appearance it somewhat resembles a piece of liver, only not so dark in color; is quite tough, does not tear easily, but cuts smoothly and easily with a sharpknife.

MICROSCOPIC APPEARANCES.

Under the microscope it is a great puzzle or mystery, as it contains no well defined organic structure whatever. Specimens appear nearly homogeneous like gelatine, only not so, having a fine granular structure uniform throughout; thick specimens show spots or streaks of darker color. It has no sign of any blood vessels, or nerves, or epithelia, the outer and inner surface being identical. The granular structure, if the term is correct, is regular throughout, though no apparent cell structure or origin. Now after all the above facts are given, what is it? It certainly had some fatal connection with her disease, suffering, and death. May it not have been but a small fragment of a more extensive mass, that may have caused death by pressure on the great ganglion, or some other nerve centre or blood vessels?

There were no cancer or any other cells of any kind, still the patient was destroyed. No post mortem could be held, owing to objections by the family.

The tumor must of neccessity have been composed of cells of some kind, the apparently fine granular structure must have been of cell origin and growth in some form. It had not the reticulated structure of connective tissue fibres, like the first specimen, neither was it homogeneous, like gelatine. The disease was persistent and irremedial; was malignant so far as destroying life was concerned, resisting all treatment to the end except palliating. Fullness of abdomen was apparent before death, showing extension of development and growth. What condition of things could have caused the diseased growth? It is certainly a profound mystery, there being no light on the subject. Exudation or transudation might or might not account for the tumor.

ON THE DEVELOPMENT OF APPETITE.

The increase of weight of the body, observed during the administration of the phosphate of lime.

Translated from the Tribune Medicale de Paris.

By E. A. QUETIN, A. B., instructor of French in the McMicken University, Cincinnati, Ohio.

These two phenomena appear in a constant manner when the calcareous salt, prescribed as a strenthening agent, is taken by patients whose muscular system has been altered under the influence of disease, or when it intervenes in the alimentation of children in order to insure the development of the osseous and muscular tissues.

In the medical practice, the same order of facts has been of daily occurrence. Among lymphatic children, the tissues are soaked with albuminous liquids, which can not become organized, and will determine softness of the flesh and an exaggerated development of ganglions. With the intervention of the phosphate of lime, one may almost follow with the eye the transformation which takes place. Should we not ascribe also to the solidifying action of the phosphate of lime the results observed by different physicians, and especially by Dr. Blache in cases of diphtheria, well characterized, which have been speedily cured.

The physiological interpretation of the increase of weight of the body and development of appetite is derived from these facts. When the phosphate of lime is administered to a phthisic, to a lymphatic subject, or to a convalescent, whose organism has been debilitated by lack of alimentation, the first phenomenon observed, which is only a secondary effect, is the return of appetite. The second is the increase of weight which can be proved at the end of a few days. The phosphate of lime precipitates the albuminoid matter of the food in combining with it, and enables it to be transformed into fibrin, a transformation which would be impossible, but for the calcareons salt. These and other interesting facts have been developed in a recent work by M. Dusart, published under the title of "De l'Inanition Minerale dans les Maladies.

Selections.

DYSENTERY CURED WITHOUT OPIUM.

Read before the Detroit Academy of Medicine by J. H. CARSTENS, M. D., Lecturer on Clinical Medicine, Detroit Medical College.

GENTLEMEN—At a former meeting of the academy I called your attention to the inefficiency of opium in dysentery, stating that patients under the influence of either large or small doses of opium were not relieved, the discharges continuing uninterruptedly; also, the difficulties of the ipecac treatment, etc.; in short, that a *specific* for dysentery was still to be found. Dr. Connor suggested suppositories as the most scientific and rational mode of treatment—the cocoa butter alone would soothe the inflamed and raw mucous membrane. This recommendation I have acted on with good results.

I would like to call attention, however, first, to the necessity of making a correct diagnosis, as dysentery is often only a symptom, as the following case will show:

Mrs. H., æt. 54, was taken August 4th with a severe dysenteric discharge; the next day was apparently well, except being weak. August 6th was again severely attacked with the "dysentery," as she said. I diagnosed malarial toxæmia, and administered thirty grains of sulph. of quinine, with ten grains of capsicum, in the next twenty-four hours, the dysentery not reappearing.

This case, and I could bring forward many snch, shows that the discharge considered pathognomonic of dysentery, is often only a symptom and not the real disease. But let us consider genuine dysentery occurring in epidemics.

Frank H., æt. 15, was attacked with dysentery July 3d. This was during the height of the epidemic we have just passed. For him I prescribed one grain of quinine, three drops of chloroform, and three drops fluid ext. ergot, every three hours. The bloody stools disappeared the next day, with but slight tenesmus the day thereafter, and in six days was entirely cured.

Henry O., aged three years, has had dysentery for two weeks; bowels moved every five minutes, the mother states. I had some suppositories made as as follows:

℞.	Pulv. ipecacuanha..	ʒss.
	Pulv. ergotæ..	gr. xv.
	Quiniæ sulp..	gr. iv.
	Olei theobrom..	q. s.

For twelve small rectal suppositories.

I directed the mother to introduce one every two hours. The next day great improvement was noticed in the patient. I prescribed twelve more suppositories, which cured the child entirely by the second day, with no other treatment whatever but a good nutritious diet.

Charley K., aged two and one half years, was brought to my office by his father, who gave the following history: The child had been suffering with a diarrhea for some weeks, but in the last three days blood appeared in the stools, the child having, during the discharge, much tenesmus. I gave the father some of the above described suppositories, to be used as before stated. Calling at the house the next day, the mother stated that some of the suppositories were passed immediately after their introduction, and that they

caused much bearing down pain. I directed that if a suppository was passed shortly after its introduction, another one should be used immediately, and that it should be passed high up. This was done, and although some suppositories were passed, and others remained, the blood first disappeared, then the discharge diminished, and the child was well the third day.

Otto N., aged eighteen months, was suffering with dysentery for one week. Also in this case used only the suppositories, six of them curing the child.

M., aged eight months, was brought to my office by the mother. Had had dysentery for three days. I began using the suppositories, and the child was much improved the next day, but the day thereafter the child was worse, weak and fretful; frequent discharges, not of a dysenteric character, but thin and watery, such as we find in cholera infantum. Ulceration around the anus, the latter with deep fissures, surrounding part swollen and painful; for this ordered weak carbolic oil, prescribed mixture of pepsin, bismuth and brandy; the next day not much change, could not take mixture, so left out the brandy and only prescribed the powders. The mother did not return with the child, but went to some other physician, and I have heard that the child died two weeks thereafter.

M. W., aged three years, was brought by her Polish mother to the Detroit Medical College dispensary. I learned that the child had had dysentery for three weeks; to-day had already twenty-five passages, with much blood and tenesmus. Began using suppositories at 2 P. M., and until the next morning at 10 o'clock had only two discharges, using a suppository every two hours. Continued suppositories until the next day, when the child was well.

Dr. J. P. Corcoran requested me to give him a few suppositories to try on a child under his treatment. I did so, and he furnished me with the following report of the case: Mathew H., aged ten months, just arrived from England with his parents. August 17, 12 M., I commenced using suppositories. Had forty-five discharges during the twenty-four hours preceding this date. August 18, at noon, little improved. Number of stools in twenty-four hours, sixteen. Continued using suppositories every two hours. August 19, only three stools of a natural color the last twenty-four hours. Patient discharged.

I must mention one more case: Charley H., one year old, dysentery for one week, not a very severe attack. In this case, also, used suppositories, one every three hours. The next day, after four had been used, child began to vomit, and had to discontinue using them. The vomiting ceased without treatment, and the dysentery had disappeared.

I could give the histories of more cases, but this is sufficient to show that by suppositories alone we can cure a good number of cases of dysentery. We may jointly administer remedies by the mouth, also, if necessary. In these cases, however, I used only the suppositories, to remove all doubt of what cured them.

Dysentery being an "infectious febrile disease," due to a specific poisonous germ, and quinine being the best remedy to destroy and neutralize the specific poisons, it ought to be good for dysentery. Ulceration being a prominent result of dysentery, as quinine diminishes ulceration, this is the remedy. Hemorrhage is a prominent symptom, and as ergot contracts the smaller blood vessels, and prevents hemorrhage, that is the remedy. Severe spasms and tenesmus being most complained of by the patient, and ipecac being most emphatically an anti-spasmodic, it is good for dysentery.

The proportions of these remedies in each suppository should be regulated by the symptoms. From these few cases I would conclude—

1. That by means of suppositories we can cure dysentery.

2. That this is the most rational and scientific mode of treating this disease.

3. That children object less to their use than to nauseous drugs administered by the mouth.

4. And that probably quinine, 'ergot and ipecac, are the best remedies to use at present at our command.

THE BRAIN POWER OF MAN.—HAS HE TWO BRAINS, OR HAS HE ONLY ONE?

A Lecture by Dr. BROWN-SEQUARD.

Dr. SEQUARD commenced by saying that his view, he hoped, being somewhat novel, would command attention. The facts he would dwell upon were new, probably would not be generally accepted, and perhaps would not be easily understood by those not familiar with medicine.

Have we two brains? and, if so, why not educate both? The views of science upon this subject were different from his. The left side of the body was the side affording volition to the brain, and, *vice versa*, the right side of the brain afforded volition to the body. Eminent authorities had declared that either side of the brain was competent for this purpose.

But we use only one side, and, therefore, leave out of account one half of brain matter. We owe due education to both sides of the brain, or rather to the two brains.

As to intelligence, the eminent authorities he has cited established the fact that either side of the brain was competent for full development of the brain faculties. There were many persons of two minds, because they were never able to make up their minds. Some men claimed to be rational while they were insane. There were many cases that showed clearly that there were two brains. He had known a boy in Loadon that manifestly had two brains, whose p-culiarities he described. He would fall into a comatose state, and suddenly open his eyes brightly, inquiring of his mother why he was not introduced to the gentleman who was present while he was asleep. Again, the lecturer saw him when the boy recognized him. He had two mental lives. He knew nothing of what occurred in his sleeping condition when fully awake; and when in the latter condition, he knew what had occurred when in the former. The lecturer had seen three cases of this kind.

As regards faculty of speech, the fact that we had two brains was not so easily proved. The loss of the faculty of expression depends upon disease of the left side of the brain; and this proves that the right side is distinct.

As regards sight, a theory has been put forth by a celebrated physician of London that the right side of the base of the brain is the centre of sight. The inner half of the right eye and the outer half of the left eye have the base of the brain as the centre. A disease in the left side of the brain, where the optic nerve touches, would therefore affect only one half of the brain. Notable cases were given in which parties had seen but one half of certain objects that they gazed upon. If the disease exists only in the left side of the base of the brain, only one half of the eye will be affected. So there are many cases that go to sustain the philosophers. But we do not accept conclusions unless theory is thoroughly supported.

There were three series of facts, but one would be enough to show that the theory should be rejected. Disease of the brain, where the optic neive touches, would not be sufficient to cause loss of sight. One side of the

brain would be sufficient to sustain sight. An alteration in any portion of the nervous system, acting upon other parts, can produce disease in that part. Injury to the spinal cord would produce loss of sight on either side. There was nothing more common than the loss of sight temporarily in children who suffered from worms in the stomach. An injury in one half of the brain can exist without producing loss of sight. Either half of the brain may, therefore, serve to sustain sight.

As to the voluntary movements, these depended upon the action of the body. Yet there were many small muscles which were not affected in cases of paralysis. There were cases on record in which it was shown that the lower lobe of the brain could be destroyed without affecting these voluntary movements. There were several such cases. We must, therefore, look on one half of the brain as being sufficient to sustain voluntary movements on both sides of the body. An irritation in any part of the brain may affect any part of the body, and an irritation in any part of the body can produce paralysis in another part. The irritation could also act upon remote parts. This shows that the power of will does not control the entire action of the body. When paralysis occurs, it depends upon irritation.

The same reasoning applies to sensation. There were thousands of cases affecting the brain that did not affect the feeling. Passing these facts in review, we find vast differences owing to the fact that one half of the brain was developed for certain things and the other half for other things. To the left side of the brain belonged the faculty of expressing ourselves by speech. Articulation depended in great measure upon the left side of the brain. Difficulties in the mechanical point of speech were more frequently found when the left side of the brain was diseased. It was the mental part that was lost, and not the mere mechanical action. The left side of the brain was also the motive power of gesture. When the left side was diseased, patients lost the power of gesticulation.

As regards writing, it was lost more frequently in diseases of the left side of the brain. The right arm was paralyzed by diseases of this side. Many thus diseased could not write from memory, although they could use their fingers and copy. In those cases it sometimes occurs that persons could not write at all.

Intelligence depends more upon the healthfulness of the left side than of the right side of the brain. The right side of the brain in some cases has the power of the left, if properly developed. This serves to hysterical developments and to nutrition of the body. One, the left, applies to mental, the other to the natural life.

The right side of the brain operates upon the limbs in cases of paralysis and other diseases; also upon disturbances in the lungs, liver, and other parts. Hysterical and emotional symptoms are more common in cases of disease of the right side of the brain. Out of 120 cases of paralysis that came under the lecturer's observation, there were 96 caused by disease of the right side. An alteration of the retina of the eye will come more frequently from diseases of this side of the brain. Out of 69 cases of convulsions of the eyes, 47 were due to diseases of the right side. Death occurs much more frequently by diseases of the right side of the brain, and in case where patients do not die, it will produce more extensive and enduring paralysis.

All this shows not that the two sides of the brain differed originally, but that there were different developments of each. The left side of the brain was much larger than the right side. If a person went frequently to the same hatter, he would find that his hat had to be from time to time enlarged. There was no question that the brain grew. By studying a particular subject, the person became proficient, and the brain was more fully developed.

There was no doubt that the left side of the brain predominated in our system. Our being right-handed showed it. There was no population in the world that was not right-handed. The right hand of the body was mostly used. Left-handed individuals used the right side of the brain, showing the connection between these things.

There was primitively a difference between the two brains. In children, convulsions were sooner developed in the left than in the right side of the brain. This was attributable to excess of blood in the left side. Parrots roosted on the right legs, and their talking power came from the left side of the head.

There were four vital points to be considered. The first was that asphyxia was connected with the left side of the brain in persons that were right-handed, and with the right side in those that were left-handed. The second point was that children who were first learning to talk, if disease came in the left side of the brain, learned to talk just as well with the right side of the brain. Though losing half of the brain, they got along just as well. This proved that the right side could be educated, with the left hand for execution. The third point was that four out of every hundred left-handed persons learned to write with the left hand; therefore the left side of the brain, even with persons left-handed, could be educated better than the right side. The fourth point was that the leg was rarely so much affected by paralysis as the arm. He, however, would pass over this argument, as it could only be understood by medical men.

If the lecturer had established that we had two brains, then they should be developed. If we could develop the legs and the arms of both sides, we could develop both sides of the brain. If we gave as much attention to the left side of the body as we do to the right side, we would fully develop our two brains. The important point, therefore, would be to make children use both sides of the body—alternately using the right and left arm and the right and left leg equally. There would be no diffculty in thus training children to full development.

Even adults, who had lost speech by disease of the left side of the brain, could regain the power by cultivating the right side. In gesture, persons who had lost the use of the right arm could be trained to use the left. If children were thus trained, we would have a sturdier and healthier race, both mentally and physically.

CLAY AS A THERAPEUTIC AGENT.

Read before the Meigs County Ohio Medical Society.

By A. L. Knight, M. D., of West Columbia, W. Va.

Clay as a remedial agent is comparatively new; in fact, if not entirely new, it at least has been but a few years in use; and so little is known of its history as an agent that I am unable to date its application as a remedy earlier than 1864. If used prior to that time by the regular profession, its merits had ceased to attract attention.

I believe it was an American surgeon that first called attention to its merits in its application to indolent ulcers; after which a series of experiments were made in one or two London hospitals. So far as I know, the German and French surgeons have been silent upon the application of this simple remedy.

It not being the object of this paper to enter at length into the various trials, tests, and give the authors thereof, but simply to accept some of the

conclusions drawn from them, which will afford the material for this short discussion.

The material is drawn from the periodical medical literature of the past decade, most of which has passed under your observation, and which to quote would require more time than I could spare in such a discussion.

Trials made with this remedy have all been made with dry earth. I fail to find an application reported where the clay was used even in a moist condition. I will, however, before closing, give some results from the use of medicated wet clay as a remedy under certain conditions that have not yet been reported, with which I have had some personal experience.

The kind of clay used in its dry state, I might add, the only kind is simple earth free from silicious matter.

You are aware that what we usually call clay may hold very different elements in its composition—as alumina, soda, potassa, lime, baryta, strontia, magnesia, etc. These latter are generally associated in what we style aluminous clay as distinguished from argillaceous, glaucineous, and other forms of earth.

From the descriptions of the clays used, I infer that the aluminous earth is the only kind used, or that has been thus used. We find it, in this country, usually underlying the sand, or silicious rock, frequently quite pure, but more generally intermixed with silicic acid and silicates.

Since the advocates of this remedy have not indicated any special kind of clay, we conclude that it is not necessary that it should be entirely pure in order to meet the ends claimed for it. The only special directions given are, that the clay must be thoroughly dried and powdered, or at least rubbed tolerably fine before it is applied.

Under these conditions, without reference to the chemical constituency of the clay, if it exerts a uniform action upon an organized body—or rather an animal body—which does not nor can draw directly from substances so presented any nutriment or alterative ingredient calculated to establish an organization where a disorganizing process is already set up.

This we infer from the known laws of animal growth, which is the result of food containing earthy matter taken as ingesta.

Hence the conclusion is forced upon us that any beneficial results obtained from this agent must be purely mechanical in its *modus operandi*. Leaving out of the question any direct action of dried clay—by which I mean chemical action, and which I am not prepared to positively deny—it could exert a two-fold influence:

1st. It would absorb at least twice its bulk of ichorous fluid, and at the same time exclude atmospheric air from the parts to which it should or might be applied.

It is to be regreted that the nature and character of the various ulcerations in which experiments were made with this agent, in the London infirmaries, by surgeons of known ability, were not fully described. In the reports, which I have examined, they make allusions to trials in various forms of ulceration, perhaps all forms except the encephaloid, and some other forms of malignant ulcers

If I am not mistaken, it has been tried in syphilitic nodular ulcers, with what effect memory does not serve me sufficiently to say. I will say, however, that the reports favored the remedy in all old ulcerations, claiming (perhaps too much) that at least sixty per cent of that form of ulcers were brought to a healthy or healing condition, with the statement that those lesions which involved the muco-serous tissues, where the discharges were profuse, without rapid loss of surrounding tissue, that it proved to be the most valuable agent known to surgery.

Taking this for granted, the foregoing, without reference to any specific cause of the given case, save that, we must repeat, in the absence of proof to the contrary, that the clay acted as an absorbent of the ichorous and perhaps sanous discharges which had been acting as a foreign body in the denuded ulcer.

My first impression, on learning the beneficial results of this agent, was that the ingredients of the clay acted upon the vascularity of the parts involved; plugging up the vessels, and by excluding the air, relieved the excitation of the sentient nerves exposed, denuded, and perhaps degenerated, by the ravages of the coroding ulcers. Under this impression, I inferred that any substance that would exclude the air would answer the same purpose, provided there was no direct agency in the ingredients of the clay.

Since learning that it was only those ulcers that discharged freely of the character above alluded to, I was forced to the conclusion that the clay did not act medicinally upon the parts, but, as before said, as an absorbent. Knowing its capacity for that, I abandoned the idea that simple exclusion of the atmosphere and compression was adequate to do all that was or is claimed foi the dry clay.

I am now pretty well convinced that dry clay is a valuable adjunct in the treatment of a class of indolent ulcers; that it will remove mechanically more efficiently than any agent at our command, the morbid, irritating secretions of the class of ulcers referred to, and deserves a further investigation at the hands of every honest surgeon.

Thus far we have presented the supposed efficacy of dry clay. The conditions indicating its use would be injured by its application in a wet state —styled in our language mud—which would have no absorbent properties.

It is known that wet clay in the process of drying contracts. Would we not rationally infer that it might be employed in certain forms of varicose? For instance, let the varicosed limb be enveloped, including its entire extremity, in tough clay, wetted to the consistency of dough or putty; then, as soon as it is thoroughly dry, remove it and re-apply in the same manner before the vessels have time to refill. This could be easily done, provided the hairs had been removed by close shaving.

I have seen cases resembling felon completely relieved by the application of clay in this manner, wet with strong ambier from tobacco, in which nicotine was the active agent. Perhaps atropine would have answered still better. I attribute the good effects in these cases to the uniform pressure exerted by the clay in drying, which we can obtain in no other way as effectually. —*Southern Medical Record.*

KEEPING THE BED AFTER CONFINEMENT.

Dr. William Goodell, of Philadelphia, in his account of the arrangement of lying-in women in the Preston Retreat writes as follows in regard to the common practice of keeping the bed:

Lying-in women are encouraged to get up for good when they feel so disposed, because there are, to my mind, strong objections to the rigorous maintenance of the recumbent posture. Labor is, in general, a strictly physiological process, and there can be no sound reason why it should be made to wear the livery of disease. Nature teaches this very plainly, for most women wish to get up long before their physicians are willing to let them. The fact of a woman's wishing to get up is to me a very good reason why she should get up. In the second place, few physicians will deny that

nothing so relaxes the tone of muscular fibre as a close confinement in bed. In my experience a woman ordinarily feels stronger on the fifth day than she does on the ninth, if rigorously kept under quilts and blankets. Once more: the upright position not only excites the womb to contract, but, by distributing the blood and equalizing the circulation, it actually lessens the amount of the lochia and shortens their duration. On the other hand, the dorsal decubitus keeps up a passive congestion of the womb as a whole, the engorgement of the greatly hypertrophied placental site, and a blood-stasis in the now thickened posterior wall—all important factors in hindering the process of involution. Again: uterine diseases are hardly known among those nations whose women early leave their beds. From passages in the writings of the classics, it is evident that among the ancient Greeks and Romans those models of physical strength and beauty, the women arose and even bathed in a running stream, very shortly after delivery; in some cases on the very day. Finally: what is sounder than all theory, a sufficiently long and well-sifted experience has proved to me that, by such a treatment, convalescence is rendered far more prompt and sure. At this result, very unexpected to the multiparous patients of the Retreat, they are constantly expressing their surprise.—*Pa. Journal.*

POINTS IN THE TREATMENT OF DISEASES OF CHILDREN.

Dr. Fothergill read a paper in the Medical Society of London, reported in the *Medical Press and Circular*, in which he pointed out that, owing to the impressionability of the nervous system in children, depressants were only required for a brief time in the treatment of acute disease; that the plan of giving stimulants freely and habitually when in health was bad, but that in acute exhausting disease they might be used with benefit, especially in connection with easily assimilable food. Much mischief often arose from unfounded fears on the mother's part as to adding to the inflammation by such measures, and the consequence was that many sick children perished from lack of strength. He then alluded to the common condition of a ravenous appetite, co-existent with steadily progressive wasting; the more the child eats, the quicker it perishes of inanition, in consequence of its inability to digest food; restriction in the amount of food given often led to recovery. Diarrhea in children was often a natural means of removing masses of indigestible or irritant material, and the plan of attempting to check such diarrhea by astringents frequently led to a condition of enteritis. The treatment was to clear away the offending matter by a dose of rhubarb or castor oil, and then to change the dietary. In many children who were suckled beyond the weaning point, or when the food was insufficient, there exists a form of diarrhea with green stools, which was curable by proper nutrition. Dr. Fothergill also thought that the anti-syphilitic treatment of disease in children who were congenitally syphilitic was confined too much to those manifestations which were associated with the pudental period of a child's existence. Experience has taught him that there were conditions of anæmia where the addition of mercury to the hæmatics administered was very beneficial, up to the time of the second dentition, if, indeed, that or any other limit could be assigned. The diathetic element required its special treatment as much in congenital syphilis as did the cachexia of acquired syphilis for successful practice. Finally, he drew attention to the conditions of excessive acidity of the secretions of strumous or scrofulous children, to the sour perspiration, the destruction of the teeth, and the uric acid in the urine.

This might be due to imperfect oxidation, or imperfect nutrition and assimilation, or both combined. As to the first, we are all familiar with the excellent effects of fresh air, especially at the sea-coast, upon strumous children, and Sugol had found such children much improved at harvest-time when out of doors, gleaning. Alkalies, especially potash, had been found useful by Brandish, Brodie, and others, as removing or neutralizing the excessive acidity; but, in addition to this, rectification and improvement of the nutritive and digestive processes were necessary. It was possible that many of the peptones never became tissue, but were directly oxidized into urine products, and also that more sugar was split up into lactic acid than the system could oxidize, and so it accumulated in the body.

BROMIDE OF POTASSIUM IN MALARIAL FEVER.

Henry J. Hilliard, M. D., of Scottsville, Harrison County, Texas, says: "I wish to call the attention of the profession to the beneficial effects of the bromide of potassium in malarial fever. I do not think that it is an antidote to the malarial poison, as are cinchona and its salts, but that it is a great auxiliary. For the past two years I have very successfully used it, both in the intermittent and remittent forms. In the majority of cases of malarial fever the nervous phenomena are quite prominent, more especially in children, whose nervous system is so susceptible of derangement. The bromide of potassium, conjoined with the local application of cold water or ice to the head, acts very beneficially in such cases by relieving the delirium and restlessness. I generally give adults, during the stage of exacerbation, the following: R. Potassii bromid. dr. j; spiritus nitri dulc. gtt. xv; aquæ puræ, f oz. j; repeat every two hours, till the period of defervescence, when quinia should be freely given; at the same time continue the bromide at longer intervals during the remission. A short time after the first dose is given, the patient generally becomes quiet, perspiration commences, and the mouth becomes moist. Cinchonism seems to be much more easily produced, absorption taking place more readily. It has greater effect over infantile convulsion during malarial fever, than anything I have ever used. Should the case be urgent, it is well to combine a full sedative dose of quinia with the first dose of the bromide, even in the state of pyrexia; quinia being the antidote to the poison. Children seem to tolerate the use of the bromide very well. Give to a child three or four years of age the following: R. Potassii bromid. sc. j; spts. nitri dulc. gtt. v: aquæ puræ, f oz. ss; repeat every half hour or hour, according to the frequency of the convulsions. As before said, quinia should be given in sufficient doses to produce cinchonism as early as possible; the bromide having its greatest effect in controling the nervous phenomena. Should the taste be objectionable, add some pleasant syrup."—*Charleston Medical Journal.*

SIR JAMES PAGET ON BLOOD-LETTING AND MERCURY.

At the meeting of the British Medical Association, Sir James Paget, as President of the section on surgery, delivered an able address. He observed that in the present day we over-valued the blood and estimated too cautiously the loss of it. There were few persons in the room who might not be bled to fainting, and to-morrow be almost unconscious of it; perhaps in

this week of hospitalities they might even be the better for it. (A laugh.) Referring to the use of mercury, Sir James observed that in his youth mercury was largely administered. It probably did good in a large number of the cases of which the real nature was not at that time discerned, and in a large proportion of the chronic diseases of internal organs which we now assigned to syphilis. Years ago there was no suspicion that syphilis affected any but the external parts. We know now a multitude of syphilitic affections of the liver, of the lungs, of the spleen, and many more still of the nervous system, which formerly were vaguely put down to chronic inflammation of unknown origin, or to tumors, thickenings, or productions of substances which needed to be absorbed. At the present time we were rather apt to think that pathology should be the guide of therapeutics, while there was a large number of cases in which therapeutics should rather be the guide of pathology. The fact that a medicine cured a given disease was as much a fact and quite as significent a one asthe employment of a chemical test for discerning the nature of a solution. It could be repeated from time to time, and with the same results. There was hardly anything in the chemistry of complex bodies more sure than that quinine cured ague and a large number of periodic diseases. As with quinine, so with mercury. If in his youth the value of therapeutic tests for indicating disease had been fairly estimated, we should have come many years sooner than we did to a knowledge of the syphilitic nature of a large number of internal chronic diseases. We were, we believed, too much under the guidance of what might be justly called inferential therapeutics. Because we knew something of pathology we might, therefore, proceed at once from pathology to the knowedge of the remedies of disease. It was a fair method of study if it were not carried to excess, but it should be studied side by side with the other fact that therapeutics might just as fairly be a guide to pathological knowledge.—*Pacific Medical and Surgical Journal.*

A NEW METHOD FOR HEALING ULCERS.

Dr. Nussbaum (*Phil. Med. Times* from *Wien. Med. Presse*) claims to have successfully treated upwards of sixty cases of chronic, extensive, and otherwise intractable leg ulcers, by the following simple procedure:

The patient is at first etherized, and then around the ulcer of the leg or foot, a finger's breadth from its margin, an incision extending down to the fascia is made; numerous blood-vessels are divided, and a severe hemorrhage ensues, unless a fine pledget of lint be packed into the cut and the entire ulcer strongly compressed. The packing with lint is also necessary to prevent union of the cut edges by the following day. Upon the second day the bandage is removed; from then until a cure is effected a simple water dressing is applied.

The author states that an astonishing change can be seen, even in the first twenty-four hours. The ulcer, which yesterday threw off quarts of thin, offensive, ichorous pus, furnishes to-day not more than a table-spoonful of thick, non-offensive, healthy pus. The old ulcer becomes rapidly smaller, healing from the margin towards the center, and is healed up in a short time; but the cut is changed into a broad circular sore, which also rapidly cicatrizes.

The great diminution of the secretion, and other favorable changes occurring in the ulcer, find an explanation in the fact that the circumcision has divided dozens of large, abnormally widened blood-vessels. Time is

thus given for the lessened nutritive material, which was previously carried off by the excessive secretion, to be transformed into cells and connective tissue; in other words, granulations are formed, which fill up and heal the deep ulcer. Without claiming this as a radical method, the author assures us that the cure is much more rapid, and the cicatrix becomes more elastic and resisting, than in ordinary means applied, which usually require so much time that the patients depart with half-cured ulcers, soon finding themselves in their previously deplorable condition.

[The practice of making incisions in the sound tissue bordering on diseased parts,.for the purpose of promoting the more healthy action of those parts, is not new. It was employed by the late Professor E. W. Cooper, of San Francisco, though we can not say whether it was original with him or otherwise.—*Ed. Pacific Med. and Surg. Journal.*]

ON THE TREATMENT OF FRACTURES.

By Dr. Schwab, of Wurzburg.

The physician, when called upon to treat a fracture, either of the upper or lower extremity, is occasionally embarrassed in the selection of his mode of bandaging or dressing; not only on account of the multiplicity of these modes, but also because the necessary articles are frequently not at hand or not easily obtainable.

I take the liberty, therefore, of calling the attention of my professional brethren to an article at once simple, yet effective, which is always to be found in every household. The same method may have been made use of by others, but I do not recollect ever seeing it mentioned in any surgical work.

The "plaster of Paris bandage" has, it is true, stood well the test of experience in the treatment of fractures, but the necessary articles are unfortunatly not always at hand, and frequently difficult to obtain.

I have found albumen, as in the white of egg, to answer equally as well as the plaster of Paris; and as eggs are to be found in nearly every house, it is always at command when needed.

In addition to the whites of six to eight eggs, there will be needed an old linen sheet from which a bandage of scultetus can be cut, a piece of pasteboard, which is always at hand in the cover of an old book, and a roller bandage from three to four yards in length.

The bandage of scultetus and pasteboard are first saturated with the albumen and the bandage carefully applied, allowing the edges to slightly overlap. This bandage should reach to the joints above and below the fracture. The pasteboard is then smoothly adjusted to the part and secured with the roller. The limb is kept in proper position by means of small bran-bags or cushions of straw.

I have used this method exclusively for twelve years, in the treatment of all fractures of the extremities, with complete success. *No shortening* or other deformity ever followed.

In fractures complicated by superficial or deep wounds, an opening is cut through the pasteboard and bandage, to permit free access to the wound.

In cases where swelling had taken place in the injured limb I have applied this bandage, and frequently found the swelling to completely disappear on the second or third day. The bandage and splint are then taken off and reapplied.

Whether it be a delusion or not, I believe to have discovered that with

this bandage the fracture unites, and mobility of the joint returns, much earlier than with any other dressing. This result I ascribe principally to the curative action of the albumen.

In comminuted fractures, also, I have not hesitated to apply this bandage, even though the splintered portions of bone could not be brought in coaptation.

As the dressing dries in a few hours, the transfer of the patient on the day of the injury is rendered practicable; in time of war this is of great importance and advantage, as it is frequently necessary to evacuate a field hospital on very short notice.

The following points, as demonstrating the superiority of this over any other method of treatment, are presented for consideration:

1. The ease and rapidity with which the articles needed can be obtained.
2. The ease of application, and rapid drying of the bandage.
3. The early abatement of the pain.
4. The more rapid recovery, and consequently the earlier use of the fractured limb.—*Memorabilien.*

THE PROMPT TREATMENT OF ACUTE DISEASES OF THE THROAT.

By F. A. Burrall, M. D., New York.

Some time since I was called to attend a middle-aged, married, American lady, who had been suddenly taken ill with nausea, sore throat, and fever. No eruption accompanied the attack, and convalescence ensued in about five days. Ten days later the youngest child was seized with scarlatina simplex. On the day succeeding the first of the youngest child's illness (Tuesday), the eldest, who had suffered from scarlatina at a previous period, was attacked, however, with sore throat and fever, unattended by any eruption. The nurse had severe tonsillitis, which commenced on Wednesday, and on the following Friday the third child showed febrile symptoms, which were duly followed by a scarlatinal eruption. During the sickness of these patients it was ascertained that a child in an adjoining house had been attacked with severe scarlatina two weeke before the indisposition of the lady to whom I was summoned. There is every reason to believe that the same poison was illustrated in distinct forms by each of the above attacks. Hence the importance with which an apparently simple sore throat may be invested, and it is at least wise to regard every acute attack of what is generally termed "sore throat" as a "questionable shape" which may envelop the contagion of scarlatina.

Similar considerations apply to diphtheria. It is not always easy to decide at once whether to apply so grave a term to a few white flecks upon a tonsil, which may be but alterations in the follicular exudation. Yet that variety of diphtheria must not be forgotten which remains for a few days under the form of a comparatively insignificant ailment, and quite suddenly develops into a fatal disease.

In his valuable work on "Diseases of the Throat," Dr. Solis Cohen refers to a malady which he terms "membranous sore throat," and which is thus described:

"There is a variety of sore throat, almost always, more or less, met with at all seasons, characterized by the exudation of a fibrinous material, which coagulates into a pellicle or false membrane. These cases are very often mistaken for diphtheria, and account for much of the success claimed for the

various treatments of that disease. For apart from the immediate danger sometimes attending the mechanical obstruction in cases implicating the larynx—cases, however, which are very rare—the tendency of this affection is to recovery; while a similar tendency in diphtheria is, as we shall see, doubtful. This form of sore throat is often met with during the prevalence of diphtheria, and *may sometimes be a starting point of that disease.* Discrimination is therefore of paramount importance."

* * * * * * * *

"The membranous deposit is often found upon the ulcerated surfaces of mucous membrane, and also upon cutaneous ulcers, and the broken cuticle of blistered skin. It presents a *similarity to the deposit found upon similar surfaces in diphtheria, but does not constitute diphtheria, there being an entire absence of the toxic symptoms of that disease.*"

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"It has already been stated that when diphtheria is prevalent, common membranous sore throat may invite an attack of diphtheria; and that it is often met with during the prevalence of diphtheria. If, therefore, there be any doubt as to its nature—and doubt may readily arise under such circumstances—the safest plan for the practitioner would be to treat it as if it were diphtheria."

There can be no question that the advice here given, to treat any doubtful case of this kind as diphtheria, is the "safest plan." Such a case came under my care, which I was disposed to regard as membranous sore throat, after reading Dr. Cohen's description of that disease. It was treated, nevertheless, as diphtheritic, and proved to be diphtheria. Evidently an error in diagnosis might easily occur; in fact, were it not for the distinguished names which endorse this title, one would readily be led to question whether this disease were not essentially diphtheritic, so strong are the points of resemblance. If we regard diphtheria as primarily a local disorder which afterwards becomes constitutional by penetration and absorption of a local poison, how difficult must it be to decide that the milder cases of membranous sore throat are not cases of diphtheria in which no absorption has taken place. As is well known, some constitutions seem almost proof against what are known in general terms as contagious diseases.

Admitting, then, that sore throat, even of a mild character, should not be neglected, the question of treatment requires consideration. What method shall be adopted? There is strong reason to believe that scarlatina and diphtheria are connected essentially or indirectly with the development of germs, and the local remedies used should therefore be taken from the class of antiseptics. Such remedies have been used even long before the germ theory was in any favor, apparently because they were found of use. Germ life is a kind of cell life, and in order for cell life to continue, investigations have shown that the fluids which run into and out of the cell must be sufficiently fluid to permit of easy transit. This circulation is impeded or annulled if these fluids are coagulated. There are also agents, such as chromic acid, carbolic acid, alcohol, chlorine, iodine, sulphur, and permanganate of potash which probably by some different chemical action destroy fungoid life. Carbolic acid is said to produce this result, arresting albuminous metamorphosis. A moment's thought will show that some of those agents, which have been esteemed both as remedial in throat diseases and also as antiseptics, consist of antiseptics in combination with astringents. Of these are persulphate of iron, sulphate of copper, carbolate of zinc. Bare experience, unattended by any theoretical knowledge, seems to have led to the adoption of several such remedies.

These thoughts with regard to the action of certain medicines in sore

throat are introduced because it is sometimes interesting to trace out the causes of things, and in the present instance to bring forward a reason why remedies have found favor in acute diseases of the throat. The main points, however, which it is proposed to present in this article are, that *no acute sore throat should be neglected, however mild, and that antiseptics should form a part of the local treatment.* Such attacks should not be neglected, both because they may be *essentially* grave diseases, and also because, if treated very early, early resolution often follows.

A NEW MODE OF TAXIS FOR STRANGULATED HERNIA.

By AUGUSTUS F. ERICH, M. D.

Prof. of Diseases of Women and Children, College of Physicians and Surgeons, Baltimore, Md.

The following history of a case of strangulated hernia successfully treated by what I will call the postural taxis, is published for the purpose of enlisting the aid of the profession generally in determing, by more numerous experiments than one person would have the opportunity of making, the true value of what seems to be a valuable discovery.

The posture assumed in this case would so naturally suggest itself to any person's mind that it is very probable it has been tried before. But as I have never seen it used or suggested, and as five treatises on surgery—including Gross' and Erichsen's—which I have consulted are silent on the subject, I feel it my duty to communicate it.

Mr. K. æt. 63 years, private watchman at a steamship wharf, had been suffering from a right inguinal hernia about two years, for which he wore no truss. He was suddenly seized with violent symptoms of strangulation at 4 A. M., Dec. 18, 1874, while at his post. Finding himself unable to procure assistance, he was obliged to lie down on the wharf, where he was found three hours later in a state of semi-unconsciousness produced by pain and cold. He was removed to his home, and my friend Dr. R. W. Mansfield called in to reduce the hernia. He administered chloroform and practised the taxis, assisted by two neighbors, until he was completely exhausted. I was then called in consultation, and after the re-administration of chloroform to a complete state of relaxation, the taxis in the usual method was practised by us, assisted by two men, as long as we deemed it safe. All our efforts having failed we prescribed an opiate, and the patient being still very cold, ordered warm fomentations to the hernia, and agreed to meet again at 2 P. M. of the same day. Having met according to appointment, chloroform was once more administered, and the taxis tried with the same assistance as before, without producing the slightest change in the hernial tumor. The patient having vomited several times, there seemed to be no other alternative than an operation. Knowing, however, the fearful death-rate after that operation, especially in persons of such advanced age (63 years), I cast about for other expedients that might avert our patient's impending doom.

Knowing that contraction as well as tumefaction in any part of the body can most readily be overcome by a gentle but continuous force if applied for a sufficient length of time, while it would resist a much greater force applied intermittingly, it occurred to me that if we could put the patient's body in such a position as to cause the intestines to gravitate toward the chest, we would apply just such a gentle continuous force as would be most likely to cause relaxation of the inguinal ring. Acting upon this theory, a couple of short boards were laid against the side of the bed, and secured in

such a position as to form an inclined plane at an angle of 45 degrees with the floor. These boards were then covered by a mattress, and the patient placed upon it, with his legs resting upon the bed and his head upon a pillow on the floor. Reaction being now sufficiently established, we ordered an ice-bladder to the ring, and arranged another meeting a few hours later for the purpose of operating. The patient had been in this position a little over an hour when we received the joyous tidings that the tumor had disappeared, and upon examination the hernia was found to be completely reduced by the force of gravity.

Although the ice applied to the inguinal ring may have assisted in diminishing tumefaction of the parts, I have used it too frequently, without success in former cases, to attribute much of the result to its influence.

The *modus operandi* of this postural taxis seems to be as follows:

1st. In placing the patient in this position, we remove all pressure against the inguinal opening from the interior of the abdomen.

2d. We make gentle traction upon both ends of the protruding intestine from the inside of the abdomen.

3d. The whole weight of the hernial tumor is brought to bear upon the inguinal ring.

4th. The natural elasticity of all the coverings of the hernia will have a tendency to assist in forcing the contents of the sack back into the abdominal cavity.

Since the recovery of this patient an additional expedient has suggested itself to my mind, which I intend to try on the next case of strangulated hernia that may present itself. It consists in placing a thin bag of fine sand of a suitable shape upon the tumor, so as to apply as much pressure exteriorly as the patient may be able to bear.

I conclude with the most earnest request to all my professional brethren to give this mode of taxis a trial, and report their failures as well as successes, so that we may soon ascertain the true value of this operation.

PERICARDITIS WITH EFFUSION; ASPIRATION OF PERICARDIUM.

By T. H. Bartleet, F. R. C. S., Surgeon to the General Hospital, Birmingham.

Dr. Harvey, under whose care the case is, reports that the patient, Henry H——, aged twenty, had been for fourteen days suffering from acute rheumatism, but under his care for four days only. Symptoms of pericarditis were observed on Dr. Harvey's first visit. On Nov. 13th he found the patient suffering from urgent dyspnœa. There was a considerably increased area of cardiac dullness and marked failure of pulse. At noon on Nov. 13th Dr. Russell saw the patient with Dr. Harvey, and reports: Very feeble and rapid pulse; very rapid breathing, much dyspnœa.

Cardiac dullness extended to one inch to the right of the sternum and to the upper border of the first rib above, though here the dullness was not complete. The limit of the dullness on the left side was uncertain, owing to effusion in the chest. On auscultation, the heart-sounds were very feeble and distant; no friction-sound. There was a faint mitral bruit. The character of the heart sounds was not affected by posture. The impulse of the heart could not be felt otherwise than as an ill-defined movement of the chest-wall at the region of the apex, spreading over a space the size of a crown-piece. The history of cardiac disorder at a former period suggested the possibility of pericardial adhesion.

At 8 P. M. on Nov. 13th, aspiration was performed. A No. 2 aspirator needle, unguarded, was used. This was passed in the intercostal space between the fourth and fifth ribs, two inches to the left of the central line of the sternum. The needle was used as an exhausting needle; and directly the pericardium was penetrated, as shown by fluid freely passing into the aspirator, the point of the needle was pressed up against the chest-wall as closely as possible. The fluid flowed freely to fourteen ounces, and then stopped flowing. It was deeply tinged with blood, and deposited speedily a scanty coagulum, and subsequently a layer of blood debris. The supernatant fluid, still somewhat tinged, had a specific gravity of 1024.

During the latter part of the operation it was noticed by all present that the needle could be felt, when held by the finger, to be moved with the contraction of the heart. The patient was breathing deeply from pain or excitement, and thus prevented any cardiographic movements of the needle being *seen*. During and for half an hour after the operation the patient complained of severe aching pain. This ceased after a dose of fifteen minims of liq. opii. After the operation the line of dullness had receded to close upon the middle line of the sternum. The subclavian dullness had not disappeared, but was much less marked.

Nov. 14th.—Had passed a good night. Dr. Harvey thought the dullness a little increasing.

15th.—Reported considerably better. Lying down with ease; no dyspnœa; marked improvement in his look; pericardial dullness hardly reaches the right edge of the sternum. The first and second intercostal spaces are clear; third rib partly so.

Dec. 3rd.—Dr. Harvey reports that the pericardial dullness has nearly disappeared, and the pleuritic fluid has been mostly absorbed. Now that the heart-sounds can be plainly heard, a loud regurgitant mitral sound is developed.

10th.—Dr. Harvey reports to-day that the patient is able to sit up and walk about in the house.

Remarks.—This case shows the ease and safety with which paracentesis pericardii can be performed, for the relief of urgent symptoms resulting directly or indirectly from pericardial effusion. There was no difficulty in the operation itself, nor was there any subsequent symptom to mar the steady progress of the case to recovery. One point more is of especial interest, namely, that no peculiar or unfavorable importance need be attached to a free admixture of the blood with the fluid withdrawn.—*The Lancet.*

ARSENIC IN MALIGNANT LYMPHO-SARCOMA.

In four cases of malignant tumor treated with arsenic by Professor Czerney, the following results were obtained: The first case was an infiltrated epithelial carcinoma, occupying the whole buccal region of one side of the face; it had already caused swelling of the lymphatic glands. The three remaining were cases of malignant lymphoma.

In all of the cases, the form in which the remedy was used was Fowler's solution, five to thirty drops per day being given.

In the first case the internal administration of the remedy was alternated by parenchymatous injections. Occasionally the reaction was quite severe, and several abscesses formed. This patient completely recovered within seven months, and after the lapse of two years no symptoms of the affection had returned.

In the second case, which commenced with enlargement of the tonsils and lymphatics of the neck, followed by swelling of the axillary, elbow, and femoral glands, the same treatment was pursued with like success. Dependence was principally placed, in this case, on the internal administration of the remedy, the dose being gradually increased until thirty drops per day were taken.

The third patient died of a scorbutic affection two months after beginning the treatment. The effect of the arsenic upon the swellings was manifest in their reduction. Death intervened in the fourth case, before the effect of the arsenic was perceptible.—*Wien. Med. Wochensch.*

CONGENITAL HYDROCELE.

Notes on Clinic, by PROF. GROSS, Philadelphia.

This child, three months old, has had a swelling upon the left side of the scrotum ever since he was born. The tumor is not soft and gaseous, as was the tumor upon the child that has just been before us.

The testis is not at the inferior extremity of the tumor, as in the other case. Pressure does not reduce the tumor. The tumor never disappears, but is sometimes smaller than at other times. When the integument is tightened over the tumor, a certain amount of translucency becomes apparent. This could be more perfectly demonstrated by placing a light between the tumor and a dark background; but the present examination will suffice.

In this affection, which we may call hydrocele, the testis is at the posterior part of the tumor, not below; although there are exceptional cases to this general rule. As a rule, the testis is situated at the junction of the inferior with the middle third of the scrotal tumor, but nearer to the bottom of the tumor than to the upper extremity. In hydrocele the tumor cannot be diminished in size by pressure, as in reducible hernia. The tumor may vary somewhat in its bulk, depending upon the state of the system and the condition of the absorbent vessels; hence there is occasionally a diminution in the quantity of water that the tumor may contain; but the tumor may be said to remain in the same condition and gradually increasing in bulk.

The tumor in this case is not conical, as in the other case, but is quite globular; this, however, is a mere accidental circumstance. In a case like this there is no material change in the overlying structures and integument; but in both the hydrocele and hernia there is *usually* considerable stretching of the integument. The spermatic cord is usually felt at the upper portion of the hydrocele without difficulty, and it is only when the tumor extends into the inguinal canal that there is any difficulty experienced in its detection; but in hernia the spermatic cord is posterior to the bowel and omentum, and is usually felt in that position. In hernia we find also that the tumor is more in the groin than is the case with hydrocele, there is more or less of the fluctuation in the hydrocele, whereas in the hernia there is never anything of that kind at all. In the hernia the contents of the tumor feel gaseous because the bowel contains more or less of air; and in the reducible variety there is always a gurgling, croaking noise when the reduction is made. Whenever there is any doubt with regard to diagnosis, the exploring needle at once relieves that doubt. The best exploring needle that can be used in these cases is the common sewing needle or a cataract needle.

(At this point a fine cambric needle was introduced, and water oozed from the puncture.)

The fluid which is at present in these fluids is perfectly clear, is saline in its taste, and coagulable by heat, alcohol and acids. It is simply the serum of the blood, and has accumulated in this sac because there was a loss of balance in the secreting and absorbing vessels. In the natural state this balance is preserved, and the vaginal tunic is simply lubricated. Nothing more need be done in way of treatment to-day than the simple puncture that has been made. Several punctures of this kind may occasionally, in cases of recent standing, produce a radical cure. The external applications that may be made, and in many cases with benefit, are quite numerous, and among them the following may be regarded as the most serviceable:

℞—Tr. Iodini	- - -	One part.
Alcohol	- - - -	Six or eight parts.—M.

Strong solutions of Goulard's extract, or acetate of lead or of alum, are also not unfrequently employed.

When the case is obstinate, the best plan of treatment is to traverse the interior of the sac with one solitary, delicate, well-waxed silk thread, and allowing it to remain for a period of eighteen to twenty-four hours; but no longer than twenty-four hours in any case. For, delicate as the operation is, it is harsh enough to excite sufficient inflammatory action and effusion of lymph to glue together the sides of the sac.

When the case is cured by means of external applications, it is not unlikely to occur as the result simply of restoration of balance between the secernent and absorbent powers of the vessel.—*Med. Record.*

Microscopy.

WIDE vs. LOW ANGLED OBJECTIVES.

Read before the Memphis Microscopical Society. (Continued from January No., p. 42).

By J. EDWARDS SMITH, Esq., Ashtabula, O.

This doctrine of "penetration," as set forth by Drs. Carpenter and Beale, had birth while microscopy was in its infancy. It soon waxed strong and became a hardy and petted baby, and the child shortly ruled the entire household. This line of march has already been traced in my first paper. Other aspects of this doctrine of penetration will now be briefly glanced at.

The present "popular and prevalent" idea is, that pathological and histological investigations require *simply* central light, or, at the farthest, centrally disposed light. The histologist conceives that oblique light has no claim on his attention. Conversely, the diatomist conducts his observations almost exclusively by the aid of oblique light alone. The result was that neither party made the best use of their instruments.

These ideas were so generally received that makers of microscope-stands took the hint and governed themselves accordingly. All (or nearly all), then first-class stands (?) were fitted with stages so thick as to *preclude the possibility* of using oblique light, and would surely defeat the *proper action* of wide-angled objectives.

[Pardon the digression while I make bold to say that there is hardly one first-class stand in twenty made that I would accept as a gift, *as sold by the makers*. Owing to those thick stages and faulty mechanism of the mirror, they are entirely unfitted for work with oblique light. In this condition it gives me pleasure to say that our own artists—Messrs. Tolles, Spencer and

Zentmayer—have always furnished stands almost entirely free from the objections named.]

Further it may be stated that observers, working with "first-class stands," fitted with stages from ¾ to 1¾ inches thick, had no possible use for glasses of wide apertures, and if per chance such glasses were occasionally used, the result inevitably obtained would be that the stage defeated the glass.

For similar reasons the diatomist, desiring to provide himself with a stand, was compelled either to order one made, or to purchase the "next best," and change it to suit his purposes.

Now, bearing in mind that histological observers (using these low angles and thick stages) out-numbered the diatomists, say one hundred to one, as a matter of course the wide aperture objectives stood little chance of being used or appreciated, and *still less of being understood and worked to their maximum.*

Having thus glanced at the situation, I beg the candid reader to weigh these things in the balance—"proving all things and holding fast to the truth."

There is not a solitary atom of matter which, when under the observation of the advanced microscopist, will not demand his most patient toil and study; the several methods of illumination will receive his *especial attention.* Central, centrally disposed, oblique, mono-chromatic light will each be mustered into service; objectives, too, having the finest definition, cannot be dispensed with. These remarks not only apply to histologists and diatomists, but to the entire corps of observers who use the microscope as a means of scientific research.

In my previous article I claimed superiority of definition for wide (as opposed) to low-angled objectives. To those desirous of looking into these things for themselves, I recommend at first the study of a trachea—say of a fly or silk-worm. This is not a diatom, and evidently fair and honest game for the histologist; and, according to the "popular and prevalent" idea, should be studied with low-angled objectives. I select this because such preparations are easily obtained, and are favorite objects with most microscopists. Most of us have repeatedly examined such slides with glasses from 1½ to 1-5 in. focus; most of us, too, have supposed that we understood these little arrangements of air tubes, and more, for we have read about them in the books!

I ask you, one and all, to help me determine the *terminal* structure of these tubes. I refer to the very LAST END; the diameter of these, near the *final point*, must be less than 1-6000th of an inch. And here is presented a "test object" that will tax the qualities of your objectives most severely, fully rivaling the famous amphipleura pellucida of the diatomists. Try your low-angled objectives and trace the structure as far as possible, and, substituting the wide-angled, believe me, you will, with proper manipulation, get still further along.

I may well call for help! I have been studying this subject for nine months, often four or five hours at a sitting, with Tolles' new 4 system 1-10. I get the best results, and see my tracheal tubes and spiral lines drawn down *exceedingly fine*, but the *end* is not yet—the low-angled glasses gave out with me months ago, and to-day 180° of an aperture does not demonstrate the problem.

And this is the little affair that we have so many times seen with ½ in. glasses "*satisfactorily.*"

Should it be desired to test a Tolles' 4 system against other wide-angled glasses, I will say that the greatest difference will be obtained by using a *balsam* mount. The Tolles' glass will do about as well over this, while the

balsam will prove an "ax at the root of the tree" with the majority of objectives.

On most of the commercial slides of trachae, the majority of the branches end abruptly; very many, even of the smallest, may easily be traced ending in this manner. Without discussing why and wherefore of this, I invite attention to those branches only that are continuous.

The diffculty in tracing these terminal coils seems to be owing to their extreme transparency. I have often observed them apparently (from their thinness) to fade from sight, but after hours of labor I could distinguish them clear across the field, and as the final "end" is approached, the diameter seems to continue about the same, but the transparent character increases fearfully. Perhaps it may save valuable time if I add in conclusion that these terminal coils *can not* be studied advantageously unless illuminated with beam of 80° from axis=160° aperture.

DIAGNOSIS OF RED BLOOD CORPUSCLES.

The subject of discriminating between human red blood corpuscles and those of the lower animals is exciting no little interest at this time. The readers of the MEDICAL NEWS are aware that Dr. Joseph G. Richardson, of Philadelphia, has taken the ground that the red globules of the blood of the pig, ox, red deer, cat, horse, sheep and goat are all so much smaller than even the ordinary minimum size of the human red disc, that we are able, by the aid of high powers of the microscope, to positively distinguish stains produced by human blood from those caused by the blood of any one of the animals just enumerated; and this even after the lapse of five years from the date of their primary production. In the last issue of the MEDICAL NEWS (Feb.), we gave an outline of a paper by Dr. Woodward, U. S. A., in which this view is controverted—Dr. W. asserting that, in the case of the dog especially, no positive discrimination can be made between its blood discs and those of the human being. He stated that the "mean size of fifty corpuscles, taken at hazard, is seldom twice the same, and sometimes that of human blood, sometimes that of dog's blood, is a trifle the largest." And with the blood of other animals than that of the dog the tenor of his paper is that the power of discriminating from human blood is very doubtful—quoting Carl Schmidt to the effect that when blood is sprinkled upon weapons, clothing, wood, etc., the corpuscles contract to nearly one half their original size.

Since the publication of Dr. Woodward's paper in the January number of the *American Journal of Medical Sciences*, Dr. Richardson has been called as an expert in a murder trial in the state of New York, and on the witness stand reiterated and successfully maintained his ability to distinguish by means of high powers between the blood of the pig and human blood. An account of the evidence is given in the *Boston Daily Advertiser*, and although it is related in language to be understood by the unlearned, yet we think it will not be uninteresting to the scientific readers of the NEWS:

"A bundle was found floating in the Seneca river, near Baldwinsville, N. Y., last June, which contained the body of one, Francis A. Colvin, an honest, simple-minded man, possessed of some property, but without wife or children, who had been killed in a stable by blows on the head with an ax. The record of the trial showed that Owen Lindsay and Bishop Vader committed the crime in December, 1873, their motive being to obtain $2,000 or $3,000 of Colvin's. Vader was arrested and turned state's evidence, but,

being an acknowledged accomplice, it was necessary for the government to corroborate his testimony by 'circumstantial evidence,' and especially that afforded by certain blood stains. A sleigh was used for conveying the body to the river, and it was afterwards used in slaughtering hogs. Specimens of the stains found on the bottom of the sleigh were carried to Dr. J. G. Richardson, in Philadelphia, an eminent microscopist of the University of Pennsylvania and Academy of Natural Sciences. Portions of his evidence given at the trial are as follows:

"Q. What was your process of examination? A. I used the process described in my book, and in the paper to which you have referred. Scraping off a little fine dirt, composed of particles of the stain, upon a glass slide, such as I use for microscopic examinations; then act upon it with a diluted salt solution for a short time; then stain it slightly with tincture of iodine, and put it under a twenty-fifth objective, giving a power of 1250 diameters. We speak of that when it enlarges an object so it appears 1250 times as long as it is, or as wide as it is; it would make an inch look like 1250 inches in length, if we could get it under the slide; it would make 1-1250 of an inch look an inch long. When the corpuscles are magnified so as to look the size of a quarter of a dollar, and other corpuscles to the magnitude of a ten-cent piece, we can distinguish between the two. As the difference between these two coins is so obvious and unmistakable that it might form a link in any chain of evidence, so the difference between the human blood corpuscles and pig's blood corpuscles, when magnified so as to appear exactly as large as the silver pieces, is just as obvious and sufficient to distinguish them apart, no matter what hangs on the decision.

Q. The coin which you hold in your left hand is the same size of a corpuscle of human blood under what power of the microscope? A. Under a power of thirty-seven hundred diameters; I used a less power on account of the convenience of manipulation; of course the relative size remains the same.

"Q. What is the effect of a desiccation of the blood, or drying of blood, upon the corpuscles? A. It does not produce any perceptible change in the size of the corpuscles as spread out for the purpose of examination; spread out upon the slide, it never has the effect of enlarging them.

"Q. Then, if drying has any effect at all upon human corpuscles, it has the effect to diminish instead of increase? A. Yes, Sir. I should further explain that the corpuscles of blood vary a little in size as cherries and currants vary, so that you might pick out a small cherry, almost as large as a very large currant, and yet could not fail to distinguish a handful of unselected cherries from one of currants, or a dozen human blood corpuscles, measured as they happen to come, from a dozen corpuscles of pig's blood.

"Q. The results of your examination in this case, first from the box marked 'A,' as to whether it is human blood or pig's blood? A. If the question is put to me in that form, whether it is human blood or pig's blood, I am able to say positively that it is human blood, and not pig's blood.

"Q. How about the box marked 'B'? A. That is also human blood.

"Q. How is it in the box marked 'H'? A. Under the same conditions of the question, the spot upon the chip marked 'H,' is pig's blood.

"Dr. John Fowler, of Hobart College, Geneva, then testified, corroborating Dr. Richardson. This evidence was contradicted by a physician of Syracuse, who had not made a study of microscopy; it was assailed by two of the prisoner's counsel, who quoted the writings of the older authorities, and also from the paper recently published by Dr. Woodward; and it was carefully considered by the judge who devoted a large part of his lenghty

charge to it; but it remains entirely unshaken. The jury found a verdict of guilty of murder in the first degree, and the prisoner was sentenced to be hanged in March."

AN EVENING AT THE ROYAL MICROSCOPICAL SOCIETY.

At the "scientific" meeting of the Royal Microscopical Society, held at King's College on the evening of the 9th December, an unusually interesting series of exhibits was shown, illustrating the progress of optical and mechancial ingenuity in the development of the instrument, which is rapidly becoming an indispensable article of furniture in homes, where intellectual culture is promoted, all over the world. One could not help being struck, after a cursory survey of the instruments, at the variety in the patterns. First, Powell & Leland exhibited two of their superb microscopes. In one of them the lines of *Amphipleura pellucida* were being resolved with a ¼-inch objective, a feat never before attempted. In the other, an ⅛th was being made to show the dots on *P. angulatum*, under the very worst conditions, namely, full aperture of the achromatic condensor, conditions under which none but the most perfectly constructed objectives would show anything but flare and indistinctness. Then there were several splendid examples of Stephenson's binocular. One of them, that belonging to Mr Stephenson himself, was displaying some exquisitely beautiful crystals of sulphur, deposited (so we understand) from bisulphide of carbon upon a glass slip. Several of the new pattern Ross instruments, designed by Mr. Wenham, were being employed to show various objects. One of them was exhibiting a piece of rock crystal (we think) containing minute cavities, in each of which a molecule was in perpetual motion—a perfectly inexplicable puzzle. In another part of the room a tolerably good result was being obtained with Wenham's reflex illuminator, upon a scale of Podura (*Lepidocyrtus curvicollis*). The scale appeared on a black field, while its markings were brilliantly illuminated. The effect was enhanced by the small angle of the objective, a French ⅛th of about 60° aperture. Away from the crowd, as befitted aristocracy, was a large microscope by R. & J. Beck, in solid silver, fitted with every conceivable piece of apparatus, all in silver. This luxurious work of art, intended for an America microscopist, and costing £500, was of course the lion of the hour, and is perhaps the most costly microscope ever made. After mention of this, there is of course no further space to allude in detail to the numerous humble brass microscopes in the room. Fortunately it is the observer who utilized it, rather than the instrument itself, who can claim the credit of a beautiful display, and to whom our advance in knowledge is due. So here the attention was riveted by many objects of unusual interest, upon each of which a long theme might be discoursed. Conspicuous among these was the exhibition of insect dissections by Mr. Loy. They were perfect marvels. Several showed the complete muscular system in certain large lepidopterous larvæ. Various slides illustrated salivary glands and other wonders of insect anatomy. All the specimens were stained in various colors, mounted in fluid, in large cells, on slides 4 in. by 2 in., or thereabouts, which were finished off in colored cements with the taste and skill which Mr. Loy's friends admire but can not imitate. This sentiment prompted several of them to assist in the display of the preparations, and so a whole table was devoted to the subject with great success. Salivary glands of insects having been brought prominently forward among London microscopists by recent discussion at the Quekett Club, there were

several specimen of these on view, indicating the active operation of an influence to investigate these organs among our working members. Several beautiful preparation by Mr. Tatem, in the category of insect dissections, were seen. Mr Guimarens had a very interesting series of preparations by Bourgogne, of Paris, illustrating the vine parasite in all its stages (*Phylloxera vastator*). Near him Mr. Fitch was exhibiting a mounted slide containing a harvest spider (*Phalangium*), upon the back of which, and attacking the eyes, was a red parasitic mite, probably a young *Trombidium*. Dr. Gray had a very curious slide on view. It was a piece of skin from the neck of a domestic fowl from Ceylon, which was completly hidden from sight by a dense mass of fleas. The size of the specimen, only a small fragment of the original, was about ⅓rd of an inch square, and on it might be counted nearly one hundred fleas. Each of them had buried her lancets (I say her, because only one or two males were among the crowd of fleas) deep in the skin. Individuals, when separately detached and mounted, bore a striking resemblance to the chigoe of the West Indies, before it enters the skin of its host. Elsewhere, at the same table, was the foot of a West Indian spider, having an extraordinary supply of large tenent hairs, illustrating, on a large scale, what is seen in miniature in the structure of the feet of several of our British tree and wall spiders. A remarkable series of models and specimens, at the left as you enter the room, illustrated in a beautiful manner the structure of the cochlea of the ear in various animals. Mr. H. Lee exhibited, with Moginie's portable binocular, the larval form of the cryfish, from the Brighton Aquarium, a creature so unlike its parents that, till lately, it was considered a distinct species, and was known as the "glass-crab," It was a beautiful specimen. Among the vegetable preparations attracting notice was a charming slide of a fungus on wood, shown by Mr. Reeves, and named by him as ? *Stemonitis*. Curious deposits from solutions of silica were shown by Mr. Slack; but I must pause in my enumeration, for in this short account, which I thought might interest some microscopists out of London, I have of necessity passed over many most interesting displays. —*Science Gossip*.

A COMPARISON OF TOLLES' FOUR-SYSTEM 1-10th OBJECTIVE WITH POWELL AND LEALAND'S 1-16th.

By GEO. W. MOREHOUSE, Esq., Wayland, N. Y.

Through the kindness of its owner, I have just had an opportunity to examine for a week a fine, late (of 1874, I believe) 1-16th immersion objective, made by the justly celebrated house of Powell and Lealand. I have good reason to think that this is one of the very best specimens of their skill. The performance of this glass is really superb. By lamp such tests as frustula saxonica and navicula crassinervis, dry, are resolved easily, plain enough for accurate count, and the striæ of amphipleura pellucida are readily seen. The defining qualities of this objective have been seldom equalled. The mechanical construction is fine, but I must give my decided preference to the arrangement for adjusting for cover of the Tolles' glass, both to its principle of construction and the perfection of its working.

The Tolles' immersion 1-10th, with same eye-piece, magnifies a trifle less than twice as much as a Beck's dry 1-5th. The 1-16th magnifies four times as much as the 1-5th. The Beck glass is, I believe, a true 1-5th, and the Powell and Lealand 1-16th, when used with immersion front, *fully a* 1-20*th*.

Using a ½ inch eye-piece, with the 1-16th or 1-20th, and a ¼ inch eye-

piece with the 1-10th, we get practically the same amplification with each, viz: x 4,000; and the difference in the volume of light transmitted by each is inappreciable. If either glass had any advantage in this respect, I at least was unable to detect it.

With central day-light both glasses were made to show, unmistakably, both sets of lines of surirella gemma, and this without regard to the direction in which the shells happened to lay. Most pains were taken in working the instrument with which I was least familiar. But, on all the tests, both by central, and more or less oblique light, the best work I could get with the 1-16th was continually surpassed by the 1-10th. On none did the higher power objective equal the lower, but the difference was most noticeable on a certain, exceedingly diffcult slide of navicula rhomboides, (equal to f. saxonica) in balsam, for it was transition from glimpsing striæ to distinct resolution. The tests tried were both dry, and balsam mounts of a. pellucida, n. curvula, f. saxonica, n. crassinervis, s. gemma, and numerous coarse diatoms, also scales of podura and lepissima, mounted dry. Most of the time was taken up on the most difficult tests, for even with the light centrally disposed the coarser specimens are too easy for either of these objectives.

While thus giving my unqualified preference for the performance of the new 1-10th, it is perhaps no more than right to add, that as between the P. & L. 1-16th and my Tolles' immersion 1-50th, I was unable to determine which gave the best results.

WHAT PART DOES THE MUCOUS MEMBRANE OF THE UTERUS TAKE IN THE PHYSIOLOGICAL PROCESS OF MENSTRUATION.

By James Barnsfather, M. D., of Cincinnati.

Dr. Thacker,—As you are one of our authorities on microscopy, in the West, I know you feel interested in any thing relating to that branch of science, from whatever quarter it may come. I would wish, for the benefit of your readers, to give some of my microscopical examinations of the the "menstrual discharge of women." For a number of years I have been an humble worker in the cause, but more especially have I interested myself in the science of gynæcology, since my last return to the United States. I have from month to month examined microscopically, not only the menstrual discharges from healthy women, but also those from females suffering from uterine difficulty. For some time past my mind has been gradually turning towards the fact that the knowledge we receive from gynæcological works is very defective, certainly the theories now promulgated are not in accordance with my observations.

The statements I am now about to make are founded entirely upon microscopical examination, as I have not been in a position to get fresh post mortem material to work on, but will try to get it for future investigation. First, I find in all menstrual discharges I have examined, exfoliations from the mucous membrane, even from females perfectly healthy ; but from those suffering from dysmenorrhœa, I find the mucous membrane in a state of hypertrophy and extravasation, and evidently also in a degenerated condition; it also passes in larger pieces than it would from a healthy uterus. I also find quantities of round cells, and also blood corpuscles.

Now, from observation, month after month, and finding the same products reproduced regularly, I am led to the conclusion that at every menstrual period, the uterus, by a peculiar physiological action, throws off the

old mucous membrane, and forms a new one, to be again thrown off at the next catamenial epoch.

If this is so, I think it is a wise provision of nature, to give to the descending impregnated ovum, a young and healthy mucous membrane that is capable of performing the natural functions so essential to its existence and further development. Again, I find that those women who have a scanty menstruation, generally suffer from a profuse uterine catarrhal discharge (called, by some, leucorrhea) immediately after the catamenia, continuing for a few days and then ceasing. I also find this fluid highly charged with debris of the mucous membrane. This evidently is the effort of nature to get rid of the old and useless membrane, so that the parts may be cleansed and ready for formation of the new and healthy membrane which can alone perform the functions for the reproduction of the species.

I give these opinions and suggestions to the profession for what they are worth, and hope that they may be the means of inspiring the younger members of the medical profession to further investigation and knowledge of the secrets of nature, as developed by the microscope and the post mortem table.

MEMPHIS MICROSCOPICAL SOCIETY.

Proceedings of Feb. 15th, 1875.

At the meeting of the Memphis Microscopical Society, Thursday evening, Feb. 15th, Prof. E. W. Morley, of Hudson, Ohio, was elected a corresponding member. Letters were read from Prof. John Pierce, of Providence, Prof. J. Tuckerman, of Austenburg, Ohio, and Mr. H. A. Hanks, of San Francisco.

DISEASED PORK.

The secretary of the society, Mr. Dod, announced the reception of a specimen of diseased pork, containing the dreaded *trichinæ spiralis*, sent the society by Mr. Henry Mills, of Buffalo, New York, one of its corresponding memhers. Portions of the meat, suitably prepared, were placed under the microscope and examined with different magnifying powers, exciting a great deal of interest among the members of the society and visitors present. The worms, coiled up in their enveloping cysts, could be seen lying between the coarse muscular fibres at irregular intervals. Magnified from four to five hundred diameters, they appeared as large as the smaller-sized earthworms. The use of this meat proved destructive to the life of at least one individual who had partaken of it freely, and several others were suffering more or less severely from the characteristic symptoms produced by the *trichinæ spiralis* disease. We may state, for the benefit of our pork-eating readers that hogs, affected by this parasite, are quite rare, and that thorough cooking seems to destroy them in all stages of their development. Those who have weak nerves, however, would do well to refrain from raw ham and raw sausages, when the *trichinæ* are about.

A NEW MICROSCOPE.

The society has received from the house of J. W. Queen & Co., of Philadelphia, a very complete instrument, manufactured especially for them after the pattern of their celebrated student's stand. It was exhibited and performed to the entire satisfaction of the members, who announced themselves much gratified with this acquisition. The instrument has first-class lenses, paraboloid, *camera lucida*, achromatic condenser, polariscope, with

selenite plates, stage-micrometer, and all needed accessions. A vote of thanks was tendered to W. H. Walmsley, of the aforesaid house, and J. W. Queen & Co., for a donation of a fine extra eye-piece.

SCIENTIFIC EVENING.

The propriety of having, at an early day, a "scientific evening" for the benefit of those who feel an interest in the revelations of the microscope, was earnestly discussed and the entire matter referred to the board of managers, with power to act. It is probable that the "evening" will be sometime in March, and those who are fortunate enough to receive invitations on that occasion will have an opportunity of seeing some of the most startling wonders of the minute world, as the society has at its command a goodly number of first-class instruments and a fine catalogue of mounted objects.

THE BEE.

The "paper" of the evening was read by Mr. A. J. Murray—subject, "The Honey-Bee." It was very instructive, and gave rise to considerable discussion.

Among the visitors present we noticed half-a-dozen ladies, who seemed to be delighted with the practical demonstrations of different subjects given during the evening.

MICROSCOPIC CURIOSITY.

We learn from the *Quarterly Journal of Microscopical Science* for January that a Mr. Baker exhibited at the Royal Microscopical Society, a slide just received from Herr Moller, and a very remarkable specimen of his skill. In a square with sides only 1-10 of an inch were eighty clear circular spaces in a dark frame work of photography, and in each space a fine specimen of a diatom with its name plainly photographed below it. The whole series could be well seen under a 1½ inch objective, and the names read. It was stated Herr Moller had prepared slides with 100 as well as those with eighty specimens, and was about to introduce simular slides of *Echinoidea*, *Holothuridæ*, *etc.*.

DECOLORING AND STAINING VEGETABLE TISSUE FOR MICROSCOPIC EXAMINATION.

By George D. Beatty, M. D.

The following is a brief statement of the processes I use to discolor and to stain vegetable tissues:—

To effect the discoloring, I use several agents: alcohol, Labarraque's solution of chloride of soda, nitric acid and water, equal parts, adding to each ounce one drachm of chlorate of potash.

Alcohol will discolor some petals and leaves, and render them beautifully transparent; but when they are stained, the epidermis and stomata are imperfectly visible.

The nitric acid mixture brings out with great distinctness the forms peculiar to the parenchyma; but it has a tendency to injure the epidermis.

The chloride of soda is, by far, the best decolorizer. It bleaches leaves and petals, and renders them transparent in from six to forty-eight hours.

After removing the tissue from this fluid the chlorine must be entirely eliminated. To effect this it must be placed for eighteen, sometimes twenty-

four hours, in temperate water. The water should be frequently agitated, and changed several times. It should be in a quart vessel.

If aniline blue be the dye, the next step is to place the tissue in 90 to 95 per cent. alcohol, acidulated with eight drops of nitric acid to the ounce. In this it should remain one hour before being placed in the dye.

I prepare my blue dye by carefully mixing in a mortar an ounce of 95 per cent. alcohol, with one-half or one grain of aniline. It is afterwards filtered, and alcohol added to make up one ounce; finally is added one drop of nitric acid. The half grain solution is the one I now most frequently use.

In dye thus prepared, petals or leaves should remain from two to twelve hours, being occasionally examined, that they do not become too dark. When taken out they should be washed for a few minutes in the 95 per cent. alcohol, then be placed for about four hours in absolute alcohol, then in oil of cloves for one or two hours, preparatory to mounting in gum dammar or Canada balsam. If not convenient to work with this rapidity, the tissue may remain in absolute alcohol for twenty-four hours, as in that time but little color will come out. In the cloves it may remain still longer, as in it no color is lost. The absolute alcohol I use is manufactured py Edward R. Squibb, of N. Y., U. S. A. A German article I have tried bleaches out dye, as if it contained chlorine or some alkali.

Aniline blue is the most beautiful and agreeable color to the eye that can be used.

That which I have most used is a German blue B.B., made at "The Berlin Aniline Manufactory," Mannheim. It is granular in character, of a bright golden-brown hue.

Only two English brands have given me any satisfaction; the first is Nicholson's "Soluble Blue, Pure"—in appearance it is similar to the German, only more golden in hue; the second is Nicholson's "Soluble Blue, R.R." It is a cheaper article than the former, and of a much darker shade. I recommend it only when the former cannot be obtained.

"Nicholson's Fast Blue, B.B.B.," and an "Opal Blue," manufactured by the same firm of Brooke, Simpson, & Spiller, London, do not answer at all, as they rapidly fade out on the dyed tissue being placed in alcohol.

In using other anilines, the process is the same, except as will be seen below.

I have used, with partial and varying success, the grey, violet, red, and green, about four grains to an ounce of alcohol. The grey should have a few drops of acetic acid added, and the green should be brightened with picric acid. After removing the stained material from the violet, red, and green, it should be kept in alcohol and cloves for only a short time, say half an hour each, as these colors rapidly fade out. Besides the anilines, I have dyed with a carmine solution made half as strong again as Beale's, substituting water for the glycerine; also a concentrated tincture of fresh berries of the Phytolacca decandra. This tincture dyes very rapidly, and not a trace of color comes out when the tissue is put in alcohol. It mixes with the acid aniline blue, forming purples.

When dyes are acidulated, the alcohol used before them should, also, be acidulated; but when the dyes are not, the alcohol should be pure. A well-chosen, and prepared leaf, mounted with the inferior side towards the cover-glass, on gradual focussing, will show—1st, hairs, if they are present, cells of the inferior epidermis, and stomata; 2nd, cells of the parenchyma and spiral vessels; 3rd, cells of superior epidermis with a few stomata.

Leaves should be small and young, not the youngest.

As much depends upon their selection, I will mention a few that have given me the best results:—*Caculia, articulata, Pteris hastata, Hepatica*

triloba, *Oxalis stricta*, or *Oxalis lutea*, *Tropæolum majus*, *Lonicera sempervirens*, *Tradescantia*, *Convolvulus*, *Adiantum*; also the epidermis of the leaf of *Mesembryanthemum crystallinum*, and *Dionæa muscipula*.

It has long been known that alcohol and chlorine will decolor vegetable tissue; but the exact method of decoloring, to prepare for dyeing, described above, together with the dyeing, are original researches.

Baltimore, *U. S. A.*, *October*, 1874.

[Dr. Beatty had kindly forwarded us specimens of staining as above described, and we are able to speak in the highest terms of their artistic beauty and finish.—Ed. *Science Gossip*.]

Correspondence.

CINCINNATI HOSPITAL.

Jones Station, Ohio, Feb. 26, 1875.

Mr. F. J. Mayer, *Member of the Board of Trustees of the Cincinnati Hospital.*

Dear Sir:—Last month, in a letter which failed to reach you through the News, I endeavored to show that the action of your board had perverted one of the organic purposes of the Cincinnati Hospital. This institution, by its charter, granted in 1821, under the name of Commercial Hospital, was created for eleemosynary and educational purposes. It was intended, 1st, to take care of the sick poor of the city; and 2nd, to foster medical college teaching by enabling college professors to illustrate their didactic teaching at the bed-side. During its early history, and for forty years, notwithstanding other medical colleges had been organized, the clinical instruction in this institution was given to one college faculty to the exclusion of all others. In 1861, in the act which provides for the creation of your board, ample provision is made for adding members from the other college faculties to the hospital staff, and thus place all on an equality.

Had your board at its first organization acted in the interest of justice, and for the welfare of all the colleges of the city, you would most assuredly have made all their faculties equal in the hospital staff, and you would now be free from the blunders, the proscriptions, and the nepotism which tend to associate your name and the names of your colleagues with actions most odious.

You will be pleased to allow me to call your attention to a few of the more salient blunders, which might have been avoided by your board acting upon a proper construction of the law.

1st. The clinical advantages of the hospital would never have been given to the relatives and personal friends of your board as means by which to break down long established college enterprises for self-aggrandizement.

2nd. Your board would not have established, without authority of law, and attempted to maintain in connection with the hospital, a dispensary for no other apparent purpose than to make room for the sons and nephews of your board and the staff.

3rd. After having established the equality of college faculties on the hospital staff, your board would not have reversed its action and returned to its clique service.

4th. It would not, in violation of the law, have permitted its staff to engage in private class teaching in the wards of the hospital for selfish gain.

So apparent was this last blunder, and so flagrant the outrage it committed, that a meeting of students in attendance at the hospital was called to consider it. The gentlemen attending the meeting very generally censured the unlawful act, and denounced the venality of that portion of your staft engaged in this unlawful private class teaching. They predicted, at the time, the result of the examinations for ward physicians in the hospital. They foresaw that none would be selected but such as had paid tribute to the mercenary portion of the staff.

That your board has managed the educational interests of the hospital during the last year unwisely no one can deny. Out of more than 600 students in attendance at the colleges, only 274 purchased the hospital ticket, and of this number oftentimes, as we are informed, during the regular clinical hour, not more than 100 were in attendance, and from that down to 43. Can it be possible that out of a class of 274, 231 were unavoidably detained from the lecture? We think not. To explain this small attendance on the part of those who purchased the ticket, we must look into the character of the teaching afforded by the staff.

The teaching now consists of so-called lectures in the amphitheatre, and ward exercises. For the supposed benefits of the latter each student is required, in addition to his ticket which admits him to the former exercises, to tickle the avarice of the staff teacher—no one but members of the staff can take students into the wards—to the amount of five dollars per month. Here, as we have said on a former occasion, is a strong temptation to neglect the public teaching which yields no pay, and keep back the more interesting cases to make attractive the private teaching which does pay. You will remember that the law nowhere recognizes the right of any member of the staff to receive any pay for anything done in the hospital, but, on the contrary, it expressly says the staff shall serve without compensation.

R. C. S. Reed.

Proceedings of Societies.

CLARK COUNTY MEDICAL SOCIETY.

February Meeting.—W. G. Bryant, M. D., President.

The Clark County Medical Society met at their rooms, Springfield, Ohio, on Thursday afternoon, February 11th. Dr. W. G. Bryant, President, in the chair. Members present, Drs. Bryant, Carroll, Dougherty, Hazzard, Hay, Reddish, Rodgers, Seys and Totten.

Dr. Carroll reported several cases of fever occurring recently in his practice. These cases were discussed by Drs. Rodgers, Bryant, Hazzard and Totten. They contained a combination of typhoid and malarial features, and were cases of unusual interest; and a consideration of the above-mentioned peculiarity led to many interesting remarks relative to the proper nomenclature, which should be applied to such complicated cases. The subtile influences of malaria in the production of fever remains a subject of unflagging interest to physicians and people.

The President then announced that the unfinished discussion of the last meeting, upon the subject of medical ethics, would be taken up.

Dr. Kay remarked that he would resume the discussion, which was to be continued from the last meeting, by noticing some of the objections, which were at that time urged against the National Code of Medical Ethics. The

only exceptions which were taken to this Code, with its fifty sections, were found in sections three and four of article first, defining the duties of physicians in maintaining professional character; and section one of article four, relating to the duty of physicians in medical consultations. The gist of these objections may be summed up as follows: 1st. The Code does not allow a regular physician to "resort to public advertisements, or handbills, or newspaper notices of surgical operations, or other similar acts," but denounces these practices as empirical and highly reprehensible in a regular physician. 2d. This Code disallows, as equally derogatory to professional character, the act of holding a patent for any surgical instrument or medicine, or to dispense a secret nostrum; and 3rd, the Code states, furthermore, that "no one can be considered as a regular practitioner, or a fit associate in consultation, whose practice is based on an exclusive dogma, to the rejection of the accumlated experience of the profession, and of the aids actually furnished by anatomy, physiology, pathology, and organic chemistry."

These three features of the Code, and only these, had been objected to by gentlemen, in their elaborate and able speeches of the last session, and because of them some of our brethren had assumed the negative position in respect to the resolution before us. It was urged that the progress of the age demanded an amended system of medical ethics, one that accorded knowledge now possessed by the profession. In commencing his reply to the arguments of objectors, he would remark, in a general way, that progress, or change of any kind, was not a thing to be so much expected in ethical as in physical science. Ethics meant nothing more nor less than the rules or science of duty, and was therefore a department of morals, not to say religion. What he had heard here during this discussion reminded him of the absurd cry of certain self-styled moral and social reformers, who claimed that the advanced civilization of the nineteenth century had outgrown the Bible, and that it called for a fuller and better declaration of faith and doctrine than that which the old, time-honored and God-given book afforded. The truth was, that the systems of ethics, morals and religion, which were given to the world many ages ago, like the architecture, sculpture and paintings of the ancients, had never been improved upon, to any considerable extent, in modern times. All the present clamor for progress and change in rules of ethics, in order to suit the progress and improvements which have been made in medicine or any physical science, was, for similar reasons, empty and futile. Whatsoever is sound and suitable ethics now, will be equally so after all the physical sciences will have advancec tenfold beyond what they are now. But he wished to notice more particularly the three prominent objections mentioned at the outset.

First. The Code does not allow a regular physician to resort to advertisements, or handbills, etc. It had been urged that this prohibition cramped the energies and talents of the younger members of the profession. It compelled them, as it were, to put their light under a bushel. It did not allow the accomplished and ambitious young physician and surgeon to set himself upon a hill, so that, like a city thus situated, he might be seen afar. In reply to this he would simply say, what was patent to all, that a worthy, well-educated and skillful physician, young or old, would surely, if not rapidly, become appreciated by the public; that his practice would grow as steadily, and his income increase as constantly from year to year as his merits warranted. At all events his success would be more certain than if he resorted to the newspaper advertisements, which some use, and others seem to sigh for. Unappreciated and unrequited professional merit is not so common a thing as some of our opponents would have us believe.

Second. It was named as an objection to the Code that it declares it

"equally derogatory to professional character for a physician to hold a patent for any surgical instrument or medicine." Medicine claimed to be a noble profession. This claim could partly be based upon the fact that all its ingenious contrivances by way of surgical instruments and medical combinations had been freely thrown open to the world. The prices of these commodities, to the people, had never been enhanced one penny by way of taxation for patent rights. Nothing pertaining to their structure or combination had been kept a secret, nor had their use been restricted to those who had previously purchased a patent right to use them. The Code does not propose to give up, nor should we be willing to give up, these acts of gratuity to the world, upon which medicine can justly base its claim to the character of a noble profession, and that too merely to advance the pecuniary interest of a few avaricious patent right dealers. When we use the term "noble" as applied to the medical profession, we attach to it a meaning as descriptive of moral character, and in proving our claim to nobility, we can not afford to dispense with the old custom which has prevailed for the last three hundred years, of throwing gratis upon the world the valuable discoveries of the science. Where one brilliant and ambitious youth in the profession has been cramped by this provision in the Code, one thousand of our fellow beings have been benefited by it. The Code provides for the greatest good to the greatest number. As to *patent medicine*, we would simply repeat what has always been asserted by regular physicians, that these nostrums are, in the main, injurious to the people, and that the scientific principles upon which these medicines are gotten up, and the ethical principles upon which they are patented and sold, are decidedly erroneous and bad. Some of the prominent officers connected with the U. S. Patent Office are beginning to take the same view of this subject.

The present Principal Examiner of the U. S. Patent Office has recently given it as his opinion: 1st. That each one of a number of ingredients being used alone to attain the result which it is said a mixture of all will, or even separate ingredients being put into a mixture to perform separate functions or meet separate indications within the human body, a mere assemblage of such ingredients—there being no chemical action—the compound should not be a thing patentable. 2d. That a proper distinction should be made between *invention* and *discovery*. Under the former a new thing is created, under the latter something previously existing is found. A patentable compound should produce novel and unexpected effects in a line not analogous to anything to which the thing has been applied before. 3d. To write a prescription is not invention within the meaning of the law, nor yet a patentable discovery, but rather a matter of skill. 4th. That the granting of patents upon the various prescriptions or compounds is pernicious; first, because the same nostrum can not be taken with benefit by all persons, even for the same disease, difference in diathesis and other conditions requiring different remedies. Such patents thus generally inure to the benefit of one, (the patentee,) and the injury of many; and second, a certain mixture of well known drugs being indicated, the already existing knowledge of the physician, of such fact, should not be trammelled by the fact that some enterprising individual had already taken to himself (by patent) a monopoly of just this mixture, in contravention of public policy and the welfare of men. Thus we see that certain branches of our government are beginning to assume the same ground in relation to patent medicines as that held by the regular medical profession.

Dr. KAY then discussed the last named objection to the Code, viz: that no privilege was given physicians to consult with empirics. This principle of our Code was based partly upon the good and sufficient

reason that the theory and practice of medicine as held, by scientific medicine on the one hand and empirical medicine on the other, were so radically different that no consultation between representatives of these opposite schools could possibly result in any good to the patient, nor in benefit to the practitioners themselves. Either the one or the other must surrender his principles almost entirely before a plan of treatment could be adopted. The Code does not ask us to act otherwise than gentlemanly with any one. It would approve of a regular physician, in acting for the immediate relief of a suffering fellow-being, whether in the presence of an irregular or not, but it does not encourage deliberately planned consultations with those who habitually denounce the regular physician as an unmitigated evil, and that continually. Professional pride and self-respect, if nothing else, should forbid.

Dr. Hazzard thought that in criticising the National Code we were not under the necessity of approaching it with that fear and reverence, which it required in criticising Sacred Writ. No mere production of man was above criticism, nor was it entitled to anything like superstitious regard. He thought that Dr. Kay was erring too much in that direction. The medical Code as it now stood was, taking it altogether, too illliberal and exclusive. This illiberal spirit, so repugnant to the spirit of the present age, subjected the medical profession to the unfriendly criticism of the world, and thus unnecessarily generated a prejudice against us. We should ever bear in mind that the spirit of liberality was abroad in the world, and that the day of narrow and ill-supported dogmas had passed. There had been a disposition toward exclusiveness in the medical profession for ages, and it was unworthy of any scientific body. Medicine had never been entirely independent of the outside world for its information. Some of its most useful knowledge had come from the most diverse directions, from the most insignificant sources, and from what some of our disputants here would stigmatize as disreputable sources. This, however, did not depreciate the value of such knowledge in the least. The truly magnanimous and philosophical mind would not disdain to receive light and knowledge from prince or peasant, from the learned or unlearned. So we should be equally catholic in our recognition of every source of goodness and truth. It would assist us very materially toward the attainment of this catholicity of spirit, to bear constantly in mind the fact that medicine was not one of the exact sciences. Many theories and principles of practice, once accepted as orthodox by the medical profession, had long since been exploded, and were now rejected. And, more than that, many of the principles and facts now accepted and acted upon by us, every day, had originated from empirical sources. Eclecticism had given us some valuable improvements in the treatment of certain diseases; improvements in therapeutics also, as well as in practice. Homeopathy also had called the attention of medical practitioners to the feasibility of diminishing the doses of medicine in the cure of disease. In view of these instrumentalities of usefulness on the part of other schools of medicine, so-called, we should enlarge our mantle of charity, to say the least. The Code, as it now stands, crystallized and encouraged this spirit of illiberality and uncharitableness. The people and humanity demanded a revision of our rules in this respect. In regard to availing oneself of the benefit of patents, he could not see the reason why regular physicians should be debarred the privilege of making all the money in this direction that other men enjoyed. A doctor was under no more obligation to confer gratuitous service upon the world than others, but, on the contrary, he was under the same moral obligation to attend faithfully to the pecuniary interests of himself and family. If he invents anything that proves successful in the cure of maladies or the adjustment of surgical accidents, he should be well paid for it; at least better paid for it than the Code would allow him to be.

Dr. Carroll had noticed that the gentlemen on the opposite side were laboring under a serious misapprehension in regard to the conduct which the Code requires of physicians towards men of other schools. It advised physicians to act the gentleman toward every one. He believed in man being honest in his professions, and could not see how men, belonging to certain of the empirical schools, could possibly believe what they profess. If these empirics believe what they say, we cannot possibly consult with them, and if they do not believe in their own absurdities, then a consultation would be quite impracticable. The only matter to decide in this connection is, whether any good would accrue from the recognition of irregulars in medical consultations. Dr. C. then commented upon the position taken by certain high homeopathic authorities upon the subject of infinitesimal dilutions, showing the impossibility of agreement as existing between homeopathic practitioners and regular physicians.

Dr. Bryant said that he had been acquainted with all the members of the regular profession in this county, and that, with the exception of some, perhaps, who are not members of this society, all are in the habit of obeying that Code. He himself had tried to adhere to that Code. He thought it best to make this statement for fear that the public might think that the occasion of this extensive discussion was a habitual violation of the provisions of our Code. This, as he knows, would be misapprehension. He knew of no complaints of the kind existing in our midst.

All further action upon the resolution being indefinitely postponed, the society then adjourned to meet again on the second Tuesday in February.

CINCINNATI COLLEGE OF MEDICINE AND SURGERY.

The commencement exercises of the thirty-seventh regular course of lectures of the Cincinnati College of Medicine and Surgery, took place Thursday evening, February 18, at Thoms' Hall, on Central Avenue. There was a fair sized audience present. After prayer by the Rev. W. I. Fee, the Rev. Dr. F. S. Hoyt, editor of the Western Christian Advocate, and President of the Board of Trustees of the college, delivered a short and interesting address to the graduates, preparatory to the conferring of degrees.

He said the trustees felt much satisfaction at the present condition and future prospects of the institution ; at the qualifications of the faculty, and the thouroughness of the examinations. He congratulated the class on the completion of their studies. He admonished them that they were entering upon a profession as responsible as it is honorable, and that, if they would adorn it, they must aim at a high path of duty and usefulness. They were entering the profession at a remarkable period, when the conflict of mind with mind, of science with science, and of science with religion, was especially active. He was sure, though, that as they attained more and more knowledge and the higher truth, they would come to realize that there was no real conflict between revelation and science. They were standing, he said, as priests in the Temple of God to minister to humanity. In conclusion, he again admonished them that they could not be wise and great in the profession they had chosen without earnestness. faith, and integrity.

The degree of M. D. was then conferred upon the following gentlemen :

Amick, W. R.,* Cincinnati.	Mozee, W. T., Kentucky.
Alexander, John B., Ky.	May, Jas. W., Ohio.

*Have been resident physicians at the Cincinnati Hospital.

Broadbent, John W., Ind.	Meek, J. M., Ky.
Boyson, Otto, New York.	Massie, J. L., Ky.
Dumbauld, Wm. A., Ohio.	McGrew, Henry, Ohio.
Forsyth, Jas. L., Ohio.	Potter, E. J., Michigan.
Fitzpatrick, T. V., Cincinnati.	Rawlins, S. T., Kentucky.
Hughes, Wm. Mo.	Runkle, W. S., Ohio.
Hinman, Newell, Michigan.	Rosenkrans, F. E., Mich.
Hart, G. L., Ohio.	Rose, G. L., Michigan.
Hedden, Jno. W., New York.	Sparrow, L. C., Kentucky.
Jones, H. W., Ohio.	Trembly, G. D., Indiana.
Lownsdale, Thos. W., Indiana.	Woodruff, F. M., Indiana.
Morrison, J. A., Indiana.	Wittkamp, Theo. M.,* Cin.

Prof. R. B. Davy, M. D., then delivered the valedictory to the graduating class, an abstract of which we give:

GENTLEMEN OF THE GRADUATING CLASS:

We have labored hand in hand with you for nearly five months, and our labor has not been such as we fain would cease, for it has been a pleasure to us. It is more than a pleasure to stand before you this evening and greet you as brothers in the regular medical profession. * * *

Before the time of Harvey material man was almost as far from comprehension as his spirit is at present. Now, as he were a glass toy, we transfix him with our eyes; comprehend that wonderfnl fluid, the blood, rushing through its countless channels; note the beautiful mechanism of glandular action; and measure in actual time the velocity of thought and nervous force. These are great achievements, but still the whole mystery is not unravelled. The immortal Harvey caused a sun to rise upon the dark vales of medicine, and his followers have rolled this luminary up higher, and illuminated many other dark recesses; yet still, where the mind would travel and explore, there are caverns where no sunlight penetrates, where everything is darkness and oblivion. Man, in many respects, is still a mysterious being, but he is not the only creature of the world, and modern scientific investigators have recognized that fact. Being driven hopelessly from individual to individual down the scale of organic life, they have finally taken refuge in the crudest forms of nature; the inhabitants of the bleak boundary of the organic world; the beings almost without a being. Thus in the crawling worm, and unthrifty weed, scientists see with clearness what has long gone glimmering from their sight. Since the Spencerian theory of evolution has been in vogue, the study of man has changed greatly. In the light of this hypothesis, physiology is scattering its secrets broad cast to the world; many of the mysteries of psychology have become transparent; and sociology has come into existence. To look upon man then, the cap stone of this great tower of organic life, with his pleasant contour, and definite size and color, we are directed to the monad, the red fern, or the infusorial animalcule for a solution. When we dwell upon the wonderful properties of the plasma of the blood, the highest order of protoplasm of which we have any knowledge, and possessed of its hundred astounding characters, we instantly revert to the crude, watery fluid which serves as protoplasm to these primitive beings. * * *

Disease, which is looked upon by so many as a terrible monster swinging his poisoned sword from right to left, is but a condition resulting from the influence of certain substances upon the human protoplasm. Disease can be simulated by the administration of medicines. With our pharmacopeia we can produce a thousand different phases of disease without exhausting our drugs. With every individual our remedy changes its action, perhaps

slightly, yet absolutely, for it meets every time a chemically different character of protoplasm. It is interesting in this connection to look upon a collection of differently constituted men from all parts of the country: for instance a class of medical students. The frigid north, the burning south, the riotous west, the excitable east are all represented. Their associations and manners crop out in their faces, not to speak of their food. They are all fruits of different trees, and have grown in different and distant countries.

Then let it not be supposed that, because every man has a nose, two eyes and a mouth, a dose of physic of a certain strength will reach every case. Life is a perpetual vibration. We cannot say that our condition remains the same for any two moments. If we eat a hearty dinner, receive a terrible shock, or pass through a spell of sickness, each act stamps itself upon our organisms in some way, and a certain systemic condition is produced to be immediately changed by succeeding influences. If we walk out into a bracing atmosphere, we feel a sense of buoyancy; if we sit in an ill ventilated room, we feel a sense of oppression. The latter condition is disease as truly as the former one is health. The condition thus brought about in the system is but a simple one, compared with breathing such air for a considerable time, when the typhoid condition would be produced. The human economy then is an exceedingly delicate organism, situated in the midst of influences, beneficial and deleterious; on the one hand is the food of life, on the other is the potion of death. While all organisms are endowed with properties of election, perversions occur nevertheless, and either accidentally or unnecessarily they partake of poisons, and disease is the result. Disease is not always the result of poisons, unless we consider them so figutatively, for the dyspeptic passes unconsciously into an incurable illness, while his table is served with the most healthful viands. The quality is healthful, the quantity is poisonous. If a person takes a grain or two of strychnia, the nervous and muscular systems are affected in a very decided and serious manner. Another condition arising as a complication of wounds is essentially the same. The rational conclusion is that some poison is produced in consequence of said wound, and borne to the nervous centres, where it produces its terrible effects.

Instances "ad infinitum" might be cited to prove that disease is but a condition of the organism produced by one or a number of these so-called poisons, either ponderable or imponderable. That disease is complex depends upon the fact that the organism is complex; the abnormal conditions of simpler organisms are undoubtedly simpler. The qualities with which the organism is endowed enable it to withstand considerable quantities of poison. Thus the healthy individual can not only bear extreme heat and cold, but the power of sickening drugs, and disease itself—hence the "vis medicatrix naturæ," the physician that heals without medicines. There are those who ignore the use of drugs, leaving all to nature; it is needless to say they are wrong. Dr. Dunglison, in his peculiar inquisitive manner, used to say in regard to gout, "when I was younger, I took colchicum, and got well; now I am old, I take no colchicum, and still get well." This does very well for gout and many other diseases, but would not do at all for tubercular or malarial disease. Deeply thinking men no longer say: "throw physic to the dogs! I'll none of it!"— they make a distinction between diseases, recognizing certain ones tending to spontaneous cure, and certain others, requiring interference. The condition, following the proper administration of chloroform, needs no interference for its removal, and yet we cannot deny that it is a disease. The ulcer, following the continued application of cantharides, or tartar emetic, needs no interference, other than to discontinue the application, and protect the surface.

If speculation was in order, I would say that, were the veil lifted which conceals the intimate nature of diseases from our view, we would be amazed to find so many connected with the nervous system. I will speak of one instance only in this connection, and there I think we are treading upon the border of a great discovery; I mean the peculiar phenomenon of fever, especial malarial fever. This monstrous enigma, the dread of the world, before quinine was introduced, and as difficult a problem since its introduction, has baffled wise men and fools alike. It has always been the wonder of scientific men, and its solution their dismay. Though it is and has been the everyday acquaintance of the physician, yet it has kept its secrets locked up from him and all others. Its actions are so familiar that we cannot forget them; the cold stage, the hot stage, and the sweating stage for the intermittent—the cold and hot stages for the remittent, and the congestive chill. * * * * * * *

We know that the smaller arteries are provided with muscular coats which enable them to contract or enlarge, thereby regulating the supply of blood to a part. These muscular fibres are connected with the sympathetic ganglia and spinal cord by the small peculiar fibres of the sympathetic nerve. Thus, from a certain impression, received by these centers, the vessels contract or relax, as the occasion may be. When an increased amount of blood is allowed to flow to a part, nutrition, with its attendant production of heat, carbonic acid, etc., is accelerated. Nutrition seems to be regulated alone by the supply of blood furnished. If we expose the body to a sudden cold, as a bath, the immediate result is a contraction of the blood-vessels on the surface. The amount of blood is diminished, nutrition is retarded, and animal heat made less. In reaction, the blood returns, and nutrition is quickened. In inflammation, according to Estor and St. Pierre, there is an increase of about three times the normal amount of blood flowing to the part, and about twice the amount of oxygen consumed, raising the temperature from 5° to 10° Fahrenheit; nutrition is actually quickened. Brown-Sequard, Bernard, Legros, and others determined beyond doubt the control of the sympathetic nerve over the vascular system. By dividing this nerve, the part to which it was distributed became inflamed and hot, showing indirectly that the muscular tonicity of the vascular coats was lost, and control over the nutritive process was also lost. Dupuy excised the cervical ganglia in horses, with the effect of producing injection of conjunctiva, increase of temperature of ear, and an abundant secretion of sweat on the corresponding side of head and neck. Bernard has lately shown that secretion in glands is regulated by this system of nerves, along with the vaso-motor system, and placed the true centers somewhere in the spinal cord, or lower portion of the brain.

What relation does fever, and especially malarial fever, hold to the ganglionic and vaso-motor systems of nerves? When this question can be answered there can be no hesitancy in saying that a great discovery has been made in medicine. The probability of answering it grows with the progress of science, and even now it seems that in their daily rambles men are trampling the soil that barely covers some wonderful pathological truths. A few more vivisections, a few more experiments with quinia, ergot, nitrite of amyl, etc., might tell the whole story, and unfold to the world a picture real as life itself, and beautiful as a dream. To determine the state of nervous irritability, rate of nervous conduction, and other qualities of the nerve, and the effects of our various therapeutic agents, which undoubtedly change their conditions, is by no means impracticable.

Electricity is being constantly generated in the tissues, and it acts powerfully on nerves for good or evil. Would it be too imaginative to picture this agent doing improper work here, and the quinia setting it to rights?

Arsenic, an acknowledged nervine, may act like quinia, or differently, and bring about the same final results. Shock, too, is an important agent in the cure of malarial fever. To view this thing impartially, it would appear that if the nerves under consideration are not alone concerned in the production of these obscure conditions; they are cetainly very closely connected with them. * * * *

When administered in continued fever or pneumonia, alcohol displays its physiological effects, and a cure is the result. Are we to agree with the old idea, that it acts merely by hardening the tissues, and preventing decomposition exactly as when we preserve a dead anatomical specimen with it? Not at all! Our rational conclusion is that it performs its work upon the vaso-motor centers, which, in turn, affect the tissues through the blood supply. There is yet another subject of which I wish to speak before dismissing you, and that is the state of our laws concerning medical science.

Though all understand science to be a creature for the general good, yet is it embarrassed and persecuted even in this enlightened age. The handful of men who are enrolled as faithful in the cause of science should enjoy free hearts, free thoughts, and free hands. Science should be the pass word to every luxury at the disposal of the state, and a signal for ready help in any country, and among any people. But experience tells us quickly that science is not the ideal goddess of all the world. Her adorers are actually very few, while the number of unconscious and indifferent persecutors is legion.

The law would exact the extremest minutiæ from a surgeon, would almost require him to do impossibilities, yet withholds from him the very means which would enable him to perfect his knowledge and skill. It is not asked at all that the law should dispatch a guard with every "body snatcher" to keep off friends of the deceased, but it is expected that it should view the matter wisely, and protect instead of persecute scientific investigation.

The S. P. C. A. is perhaps a noble enterprise. It certainly is so long as it punishes the unfeeling teamster for cruelty to his beast, or the vagrant cock fighter for such perverted use of his chicken; but when it thrusts its hand into the way of science it becomes at once a tyrant. It is not meant that rulers should be scientific enthusiasts, or crusty book worms, but that they should be able to appreciate what power it was that raised the world out of the filthy depths of barbarism, and to what point we may look for the road to future perfection. * * * *

There are hundreds of silent workers to-day, delving the mine of science, consuming their time and substance with no thought, expectation, or hope of compensation, other than the paltry share of honor they derive.

There are hundreds of others, powerful in thought, as the lion is in strength, who would gladly enter this army of the Lord, but, poverty stricken, they cannot. The mouth must be fed, and in this tedious procedure the point of enthusiasm is blunted, the march of science is checked, and mankind is the sufferer.

Oh! Unhappy world, full of dangerous faults, to ignore the pure wine, when it is held to your very lips, and drink the dregs of misery.

All of you perhaps, by this time, are disposed to esteem yourselves highly, and, to some extent, I sympathize with you in the feeling. But if you degrade yourselves, think not that the honor of the profession will keep you up. Every man's reputation, whether physician or layman, depends upon his own actions.

Imitate your superiors, and ignore your inferiors, with this special observance, that under all circumstances you avoid idleness. If you wish to serve

your "alma mater," do it not alone by sending students to fill her halls, but by your labor and skill in working upon the unfinished structure of science, that it may be known in after life, and written upon the pages of history, that such a member of the graduading class of February, 1875, was the discoverer of some profound secret in medicine, and an ardent worker and honorable man.

Consider that this is the only favor your alma mater claims of you, and when you have separated and gone to your homes, do not forget it.

Need I caution you against the abuse of alcohol? I think not, my acquaintance with you is such as to render it unnecessary. But did I not know your habits, I would say—touch it lightly, handle it carefully, give it to your patients, for it is excellent in disease; study its effects upon the vital processes of animals, keep it among your drugs but do not give it the opportunity to transform you into a madman or a drivelling fool.

Some of you, perhaps, are not strangers to the galling yoke of poverty. If so, console yourselves with the thought of following in the track of the greatest men from abject misery to sublime honor. Poverty in itself can restrain the power of genius no more than the barking dog can stay the course of the moon. Making money should be a secondary matter. There is no man who can not accumulate enough to live upon, even in the practice of medicine. The true spirit of one's life should be but an allegiance to science. My last word to you (excuse so much advice) is borrowed:

> "Honor and shame from no condition rise,
> Act well your part—there all the honor lies."

CINCINNATI COLLEGE OF PHARMACY.

The annual commencement exercises of the Cincinnati College of Pharmacy were held Monday evening, March 8, in College Hall. Owing to the illness of Prof. Wayne, Prof. J. F. Judge delivered the opening address, and conferred the degrees upon the graduating class. In his address he set forth the object and aim of the College of Pharmacy, and sketched the relative positions of the physician and pharmacist, depreciating the clashing and lack of co-operation between the two professions. The college, he said, had been organized in 1850, but did not organize a working faculty till four years ago. During the last term the college has had seventy-six matriculants, of whom twenty-one applied for graduation, but only seventeen passed the necessary examination.

The regular address was delivered by Hon. Samuel F. Hunt, and was a polished essay, elegant in diction and replete with classical allusions. Very beautiful, but applicable to any occasion.

At the close of the valedictory, delivered by Mr. W. J. Ratliff, of the graduating class, Mr. A. W. Bain, President of the Alumni Association, awarded the alumni prize, a gold medal, to Mr. Theodore Bange, as the student who had taken the highest percentage on examination. The class then presented the faculty of the college with an oil portrait of the late Prof. W. B. Chapman, which had occupied one side of the stage, veiled during the evening, The unveiling of the painting was received with warm applause. Prof. Judge returned the thanks of the faculty.

The following are the names of the graduates: Theo. Bange, Ohio; C. M. Greve, M. D., Ohio; John Jungkind, Ohio; John Keller, Ohio; L. K. Marty, Ohio; Albert Mente, Ohio; Theo. P. Pellens, Ohio; Henry H. Penkhaus, Kentucky; Louis Rapp, Ohio; W. J. Ratcliff, Ohio; John H. Rielag, Ohio; Hugo Sattler, Ohio; John F. Sanns, Ohio; Allen Shaffer,

Ohio; Wm. B. Strang, Ohio; John J. Winkelman, Ohio; Ferd. Zuenkeler, Ohio.

THE BANQUET IN THE EVENING.

In the evening a banquet, in honor of the graduating class, was given at Kepler's by the Alumni of the college. A company of about sixty from the various classes, the faculty, and a few invited guests, sat down to the table, about 11 o'clock. At the conclusion of the repast, which was of the cold water order, and very handsomely served, toasts were in order as follows:

1. "The Graduating Class." Response by Wm. B. Strong.
2. "The Cincinnati College of Pharmacy." Response by Charles Faust.
3. "The Medical Profession." Response by Dr. Amick.
4. "The Faculty." Response by Prof. J. F. Judge.
5. "The Alumni of the College of Pharmacy." Response by Louis Schwab.
6. "The Ladies, God Bless 'Em." Dr. Reamy.
7. "The Press." W. H. Harrison.
8. "The Legal Profession." Sam. F. Hunt.

In speaking of the physicians, Dr. Amick said he was reminded of the boy's definition, that they were the crackers which the angels used to get people out of their shells. Dr. Reamy thought the pharmacists ought all to join heartily in the prayer "God bless the women," because they were the creatures that consumed the medicine, and were, therefore, a source of profit to the profession. The Hon. Samuel F. Hunt, in course of a very successful speech, pointed out the close relations which existed between the profession of pharmacy and that of law. The lawyers were coming to look to the druggists for a regular amount of practice. People go to the druggists for medicines, and then after the solemn procession which follows them to Spring Grove, comes another procession into the Probate Court to contest the will, and this gives the lawyers a chance. In behalf of the profession of law, he wanted to say God speed the profession of pharmacy!

Following the speeches came a cross-fire of wit, which lasted a few minutes, and then the company went heroically to work to sing "America." It was a hard struggle for a while, but as one leader after another fell in the struggle, another stepped bravely forward to fill his place. When victory stood wavering in the balance, Mr. Hunt came in on the tenor and Dr. Reamy with the base, and the field was won. After that the band began to gather confidence and "John Brown's Body" was rendered in a manner that shed honor upon the distinguished vocalists and the institution which they represented. At a late hour the festivities were brought to a close.

Book Notices.

A Practical Treatise on the Medical and Surgical Uses of Electricity. Including localized and general Faradization; localized and central Galvanization; Electrolysis and Galvano-Cautery. By Geo. M. Beard, A. M., M. D. and A. D. Rockwell, A. M., M. D. Second edition, revised, enlarged, and mostly rewritten, with nearly 200 illustrations. 1875. New York: Wm. Wood & Co. Cincinnati: R. Clarke & Co. 8oo. pp. 794.

The object of this work, as stated in the preface, is to present, in a compact, practical form, all that is now known on the application of electricity to the treatment of disease. The aim of the authors has been to combine

their own extensive and varied researches with localized and general electrization, and the labors of all other recent explorers in electro-therapeutics, in a summary which should be at once practical and exhaustive, and which should represent with strict impartiality all that has been really accomplished in this department by every school, in every country, and by all methods.

Electricity is treated of in every department. First, we have explained *electro-physics*, then *electro-physiology*, *electro-therapeutics*, and *electro-surgery*. The need of a section of *electro-physics* has been felt to be most urgent, for the treatises on the physics of electricity, that have been most accessible, are either far behind the time, or have been expressed so blindly as to be of little value to electro-therapeutists. In the preparation of this section, the authors acknowledge their indebtedness to Prof. Henry T. Eddy, of Cincinnati, who has interested himself in the attempt here made, to put the most recent theories and facts of electro-physics in a shape at once clear, compact and trushworthy.

There are now introduced into science, six methods of using electricity for the treatment of disease: localized faradization, and localized galvanization, general faradization, central galvanization, and, in electro-surgery, electrolysis and galvanic cautery.

The work undoubtedly is the most thorough, complete work of the kind in the English language. Quite a number have been issued in the last few years, a number of them of very considerable merit, but none of them equal this one in comprehensiveness, and in the value of its matter. The first edition was translated into German.

A Series of American Clinical Lectures, published by G. P. Putnam's sons, New York, under the editorial supervision of Dr. E. C. Seguin.

The series will be begun by the publication of one lecture each month; but if sufficient encouragement be received, it is proposedto make the issue semi-monthly.

The first issued is a lecture by Prof. Lewis A. Sayre, on hip joint disease, giving the history, course, and termination, with his method of treatment which has been remarkably successful. B.

Transactions of the American Ophthalmological Society. Tenth Annual Meeting at Newport, N. Y, July 1874.

This work contains many well prepared papers on subjects relating to ophthalmology. In fact it is the most creditable volume of proceedings that has issued from the press for a long period. All the papers show their writers to be men of extensive scientific acquirement, thoroughly conversant with the subjects of which they treat.

The work contains a number of handsome wood cuts illustrating the subjects treated, and several beautiful colored plates.

Compendium of Children's Diseases. A hand-book for practitioners and students. By Dr. Johann Steiner, Prof. in the University of Prague. Translated from the second German edition, by Lawson Tait, F. R. C. S. New York: D. Appleton & Co.; Cincinnati: Geo. E. Stevens & Co., 1875, 8vo. pp. 403.

The first German edition of this work was soon exhausted, and a second one was called for. Its popularity in Germany is very great; and so far as we can learn it has met with much success in England.

The author has pursued a systematic method in his treatment of the var-

ious subjects, always giving the anatomy, symptoms, causes, diagnosis, prognosis and treatment of the various affections in regular order, without superfluity.

The translator has added, as an appendix, the "Rules for Management of Infants," which have been issued by the staff of the Birmingham Sick Children's Hospital. He has also added a few notes, chiefly relating to the surgical ailments of children.

The physicians of this country will undoubtedly find the work quite an addition to their medical literature on the diseases of children. We cordially recommend it to our readers as containing the most advanced information upon the subjects of which it treats.

Editorial.

CINCINNATI COLLEGE OF MEDICINF AND SURGERY.—The closing exercises of the winter session of this institution were held on the evening of February 18. An account of them will be found on another page. The spring and summer session has now commenced, with an unusually large class.

MICROSCOPICAL.—We hope that those of our subscribers who have microscopes, and every physician who desires to be up with the times should have one, will keep them busy at work and furnish us from time to time an account of the results.

In our February number we printed a paper by Dr. J. Williams, of London, in which it is shown by observations made on the uteri of nine women who had died in different stages of the monthly period, that the mucous membrane is renewed at this time. These observations confirm the conclusions of Dr. James Barnsfather, a graduate of the Cincinnati College of Medicine and Surgery, whose communication we publish in this month's issue. Dr. B., from repeated microscopic examinations of the menstrual flow, has for sometime held the view that at each appearance of the menses the old mucous membrane was cast off and a new one formed.

Right here we will say that an Eastern house has sent us a number of microscopes to dispose of to medical students and others. One is an excellent instrument, all brass, giving a power from 20 to 200 diameters, coarse and fine adjustment, etc., etc. Price $40.

BLOOD STAINS.—In our microscopical department is related a medico-legal case in which Dr. J. G. Richardson, of Philadelphia, was called to distinguish between pig's blood and human blood. Correctly stated, we believe, the issue between Drs. Richardson and Woodward, is *what prominence* should be given to the fact that the blood of a man can not be distinguished microscopically from that of a monkey, elephant, seal, or a dog. Dr. Woodward, we believe, does not deny that we can distinguish human blood from ox blood or pig's blood, when, as often happens, in medico-legal practice, outside evidence *narrows the question down* to a diagnosis between these two kinds; but he considers that the fact that the blood of some of the lower animals can not be distinguished from that of man should be set forth with very great emphasis; while Dr. Richardson maintains that it should only be indicated, lest criminals and their shrewd lawyers should cunningly declare that they were spotted with dog's blood in order to baffle science and justice.

THE

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Original Contributions.

CONTRIBUTION TO THE DOCTRINE OF CANCER.

By Dr. HERMAN MEISSNER, of Leipzig.

Extract from Schmidt's Jahrbucher. Translated by J. Trush, M. D.

I. HISTOGENESIS.

The opinion first suggestively expressed by Remak, that cancer cells originated in, and were developed from epithelial cells, has gradually found more and more supporters, and has been fully accepted by Waldeyer who, recently, has made some very exhaustive investigations in reference to the origin and development of cancer. Waldeyer believes cancer to be mainly an abnormal epithelial production, which, primarily, can present itself only in localities where real epithelial structures exist; secondarily, it may appear almost anywhere in the body, in consequence, either of direct propagation of epithelial cells, or, of embolism by way of the lymphatics and blood-vessels, the cancer cells not losing their vitality, or power of reproduction when thus transported to distant parts, but will, if deposited upon congenial ground, give rise to new growths of a similar kind. The attendant connective tissue-proliferation is not an essential part of the carcinomatous formation; it serves, however, as framework for the latter, and imparts to the growth certain special properties, according to form and magnitude, of the connective tissue-elements present, so that several varieties of cancer are recognized and treated of by authorities. Occasionally this proliferation of connective tissue outstrips the epithelial proliferation, as for example in scirrhus, but it is never the primary process, because, if it were, the epithelial structures could not maintain an existence, whereas quite the contrary is true, their development continues, independent germs are formed, are carried to distant parts, and there may give rise to secondary growths. According to Waldeyer the secondary proliferation of connective tissue is the result solely of the irritation and changed nutrition, occasioned by the presence of the cancer cells. Waldeyer therefore does not recognize the distinction usually made between epithelial and alveolar cancer, (cancroid and carcinoma) maintaining that both forms have the same epithelial origin, but adopts instead the designations, carcinoma corneum, or keratoides and colloides, in accordance with the special transformations which the epithelial elements have undergone. In all the standard cancer localities, (the skin, mammary gland, stomach, intestine, uterus, ovaries, kidneys, testicles and salivary glands), in which Waldeyer has observed and examined these growths, he has been able to demonstrate a continuous development of the characteristic

elements of cancer—the cancer corpuscles—from the epithelial structures, and has never succeeded in discovering any other origin.

Respecting views concerning the nature of cancer, which deviate from the foregoing, it may be stated that Thiersch for instance looks upon cancer as a purely clinical entity, and not susceptible of anatomical definition, because derived in part only from epithelial sources. Thiersch thus abandons in toto the anatomical and histogenetic side of the cancer-question. This abandonment, however, as Waldeyer very pertinently remarks, is a mere palliative, and cannot, for any length of time, satisfy even the clinician. According to Virchow, Foerster, W. Muller, Klebs and others, the connnective tissue cells are the formative antecedents of the cancer cells; these therefore, as well as the stroma, are believed to be derived from one and the same germ, which, it must be admitted, is actually the case with most of other abnormal growths. The very obvious deviation of the cancer cells, in form and arrangement from the parent cells—the connective tissue-corpuscles—is claimed to be the result of the infectious properties of cancer, of an epithelial infection, in consequence of which they (the connective tissue-corpuscles) assume the unnatural forms and properties of epithelial cells, and transmit these peculiarities to their progeny.

It cannot be said that the evidence which led to the assumption of this heterologous formation of cancer (the segmentation of connective tissue-corpuscles in the vicinity of cancer nests, their growth and transformation into cancer cells) is by any means convincing, certainly not more so than that which is offered in support of the theory of the epithelial origin of cancer; this latter theory, in addition, explains satisfactorily and without hypothesis, almost all the clinical peculiarities of cancer. Koester's view, that the cancer cells were developed from the structures forming the wall of lymphatic vessels, especially the endothelium, encounters still greater difficulties. In the first place neither Waldeyer, nor any other investigator, has ever succeded in obtaining even one microscopic preparation, exhibiting transition forms between the cancer cells circulating within these vessels and the endothelium lining the same; secondly, this theory affords no explanation why, for example, the lymphatics of the skin should generate almost exclusively pavement epithelium, with development of horn corpuscles, those of the stomach, although of like structure, only short cylindrical epithelium, and those of the cervix uteri and of the larynx, etc., different forms again; and why, further, organs like the diaphragm, the serous and synovial membranes, which are so abundantly supplied with lymphatics, rarely, if ever, are the seat of primary cancer. Recently, Rollet and others were disposed to regard the so-called migratory cells (white blood-corpuscles, leucocytes, amœboid cells) as universal germ cells for all tissues of the body; and according to Classen, the cancer cells, especially, were nothing else than emigrated white blood-corpuscles—leucocytes. In this instance again Waldeyer has found it impossible to discover anything like a transition stage from the white blood-corpuscle to the epithelial cell.

The theory of Robin and Cornil finally, though it adopts the doctrine of the epithelial origin of cancer, but maintains that the epithelial cells are the result of a generatio æquivoca, may now be looked upon as fully exploded. The nature of cancer amid other epithelial formations, is determined by the atypical arrangement of its elements. Waldeyer distinguishes two principal forms of epitheliomata, viz: the "superficial" (E. simplex, E. diffusum, E. papillare, onychoma), and the "deep," or "parenchymatous" (trichoma, struma, adenoma, cystoma, carcinoma.) Now, all these abnormal growths, except the carcinoma, exhibit a structural arrangement that is typical of the normal organism; the latter, the carcinoma, however, represents an atypical

growth of epithelial cells, a development totally irregular, and without restraint, and one which may be gradually produced from every other epithelial formation.

This view of the development of cancer at once affords a ready explanation of its malignant character, the tendency to necrosis, the early marasmus, and the great liability to metastatic formations. Everywhere, upon the common integument, the mucous membranes, the parenchyma of glandular organs, etc., the epithelial structures are short lived; no sooner are they developed than they enter upon a retrograde metamorphosis; of necessity, the atypical epithelial growths share a like fate, they undergo rapid disintegration, the necrobiotic masses are absorbed, and early general cachexia results. In this breaking down process, blood vessels and lymphatics are unavoidably laid open, and thus frequent opportunity is given for embolic transportation of disconnected epithelial cells.

The explanation given by Waldeyer, in regard to the initiatory development of cancerous growths, is directly the opposite to that offered by Thiersch; for, while the latter ascribes the progressively increasing frequency of cancer with advancing years of life to "premature senility" of the connective tissue, and a consequent relative preponderance of the epithelial structures, the former, on the contrary, maintains that the epithelial elements are relatively diminished, and that a proliferation and induration of the connective tissue takes place, especially is this said to be the case when the disease involves glandular organs. The subsequent contraction or shrinkage of this connective tissue occasions compression of the epithelial elements; in the mammary gland, for instance, the acini are found completely separated from their excretory ducts by constricting bands of connective tissue, so that the epithelial elements are everywhere surrounded by this tissue. Such conditions are found also in other glandular organs, as the tubuli uriniferi of the kidneys, the sebaceous follicles, the hair follicles, etc. These encysted epithelial structures are particularly prone to undergo necrobiotic destruction and absorption, or cystic growths are developed from these remnants of epithelial cells, or they may give rise to various neoplastic formations, more particularly irregularly shaped carcinomatous tumors. This older, or "initial" connective tissue proliferation, so frequently observed by Waldeyer, affords a special support to his hypothesis, so also those simple indurated knots in the mammary gland, which remain stationary for years, occasioning neither pain nor inconvenience, until all of a sudden they become the source of a cancerous proliferation. The development of cancer after inflammatory irritation from traumatic causes also may be cited as tending to support the same theory. Under the influence of such irritation there is in the first place proliferation of connective tissue, subsequently cicatricial contraction, and finally the development of cancer from the cicatrix.

Waldeyer's differentiation, between carcinoma and sarcoma particularly, is of interest. In pointing out the similarities and dissimilarities of the two forms of abnormal growths, he remarks that, just as the carcinoma is an atypical unrestricted epithelial formation, so the sarcoma is an atypical and unrestricted growth of connective tissue; and just as any epithelial growth may undergo a cancerous degeneration, so may every connective tissue formation (fibrous tumor) fall a prey to the sarcomatous degeneration.

The anatomical differences between the two formations are due to the circumstances, that the sarcomata are always composed of but one kind of tissue, viz: the connective tissue; and hence, as a rule, are well defined, and from the parent tissue distinctly separated tumors; while in the carcinomata, the proliferating epithelial structures insinuate themselves between all the other ad-

jacent tissue-elements, and involve consequently the entire organ seized upon. The cut surface of the sarcoma presents a homogeneous or fibrous appearance; not so that of the carcinoma, which is heterogenous, firm, but brittle and affording, on scraping, a creamy juice. Microscopically the sarcoma is monohistoid, *i. e.* made up of cells only; whereas the carcinoma exhibits actual structure, viz: a frame work of connective tissue, and, in the meshes of this frame-work, an abundant deposit of cells of an entirely different character. The sarcoma alveolare of Billroth might give rise to mistakes, inasmuch as in this growth we find collections of rather large sized, rounded cells, surrounded by fasciculæ of fusiform connective tissue cells, an anatomical arrangment which imparts to the structure the appearance of a cancerous formation. The enclosed cells are, however, numerously connected with each other and with the apparent stroma by means of off-shoots, or prolongations, while in cancer the cells lie side by side, entirely unconnected, and in appearance contrast strongly with the trabeculæ of the framework; however, only the proof that these cells originated in normal epithelium is deemed conclusive evidence of their cancerous nature. Clinically the two varieties of growths, the carcinomata and sarcomata, have been numerously confounded with each other. Both alike are characterized by their malignancy, the local and metastatic re-appearance, the spreading, destructive ulcerations, and the general cachetic condition induced. The sarcoma is, however, distinguished—aside from the circumscribed form of growth already alluded to—by the fact of its originating chiefly in localities rich in connective tissue, by its greater mobility upon the subjacent structure, by the more rapid growth, the proneness to local recurrence and the metastatic diffusion chiefly through the blood-vessels. Cancer (primary) on the other hand, rarely, or never appears in a circumscribed form, but manifests itself as a neoplastic degeneration of the entire affected organ, and is almost invariably fixed in its location (unverschiebbar). The local processes of destruction, owing to the normally very changeable nature of the epithelial structures, and their atypical arrangement, are even more pronounced than is the case with the sarcoma. The great tendency of cancer to recur at the site of first appearance, and the liability to metastasis, are readily accounted for in view of the epithelial nature of the cancer cells. Being but little dependent upon the vascular stroma and upon each other, they may be readily scattered unnoticed over the entire surface of the operation wound, there to germinate and spring up like wheat sown in the field; and, aided by their power of spontaneous movement (Waldeyer and Carmalt), they are also prone to creep along the lymphatic vessels to adjacent lymphatic glands, or to distant parts of the body, and there form secondary deposits.

In the early stages of the disease the so-called cancer cachexia is rarely observed, and if present is due, probably, mainly to the attendant suffering and changed psychical condition; whereas, at later periods of the disorder it —the cachexia—always manifests itself, being then the necessary sequence of the absorption of the mass of detritus which is daily furnished by the decaying cancerous substance.

In proof of the correctness of the views thus briefly stated, Waldeyer reviews the cancerous formations of the several organs, and shows that in the mammary gland the malignant proliferation originates either in the lactiparous vesicles, or in the larger lactiferous ducts; never in the skin. He calls attention to the preceding and accompanying interlobular proliferation of connective tissue, as a matter worthy of notice. In accordance with the changes occurring in the epithelium of this organ, under normal circumstances, the customary metamorphosis of the cancer cells is one of fatty degeneration. By this process the reticulated form of cancer is worked out.

In the stomach, cancer clearly originates in the gastric tubules and in the mucous follicles of the pylorus. Here again, the "initiatory" hypertrophy of the connective tissue papillae, which results in an encysted isolation and subsequent cancerous degenerations of the epithelial structures, is to be well distinguished from the "accompanying" proliferation of connective tissue in and around the cancerous mass. In certain cases of cancer of the stomach a simple chronic ulcer seems to be the starting point of the pathological process; and, inasmuch as Waldeyer has occasionally witnessed complete central cicatrization of such gastric cancer knots, he is inclined to the belief that cures in cases of this kind are not altogether impossible. Primary hepatic cancer, originating in the bile ducts, especially the smallest of these, as first demonstrated by Naunyn, has come under Waldeyer's observation in two instances, in both of which he succeeded in showing that the disease had originated, as above remarked, in the smallest gall ducts. In four cases of renal cancer the source of origin was found to have been in the epithelium of the convoluted tubules. In the ovaries, it was clearly demonstrable that the morbid process originated in the cortical portion of the organ, either in imperfectly developed Graafian follicles, or in corpora lutea, or finally sprung from the free surface of the ovary, all these structures being provided with epithelium, and consequently affording abundant opportunity for the development of primary cancer from epithelial cells. In cancer of the testicle it would seem that the cells lining the tubuli seminiferi are the source of the cancer corpuscles. Primary cancer of the uterus always originates in the epithelial structures of this organ, either in the pavement epithelium covering the infravaginal portion of the cervix, and then corresponding in form and development with that of the common integument, or from the mucous follicles and glandulae Nabothi of the cervical canal, presenting in this instance the characteristics of cancer deposits upon other mucous surfaces provided with columnar epithelium, as for example, the stomach, the rectum, etc. Upon the skin cancer may take its origin in any of the epithelial structures here represented: in those of the rete Malpighii, or of the sebaceous follicles, or of the sudoriparous glands. The deeply penetrating form arises mostly from the sebaceous follicles and the superficial variety (rodent ulcer) from the deeper strata of the rete Malpighii. In addition to the usual metamorphosis which the cancerous formations undergo, viz: fatty degeneration and ulceration, a horny transformation—the carcinoma keratoides of Waldeyer—is not infrequently observed. When the accompanying proliferation of connective tissue has been predominant, the growth presents a granular appearance—the carcinoma granulosum—under the form of an obstinate chronic ulcer, or is of a fibrous nature—the carcinoma fibrosum—if the young connective tissue has undergone cicatricial condensation. This latter form, according to Rasmussen, may, by progressive shrinkage, undergo a spontaneous cure, and is then liable to be mistaken for selerodorma, while the "carcinoma granulosum superficiale" often very strongly resembles lupus, and has been believed to represent a transition stage from the one to the other. Lupus, however, is mainly a granular formation—a granuloma—in which the epithelial proliferation is quite accidental.

In cancer of the thyroid gland, the œsophagus, the lungs, the urinary bladder and the nares, Waldeyer likewise has succeeded in demonstrating the epithelial form and arrangement of the cancer cells, but nowhere did he find even a trace indicative of their development from connective tissue. Primary cancer of the lymphatic system, of the spleen, of bone, in the blood vessels, upon the peritoneum and other organs, into the compositions of which descendants of the two epithelial lamina do not enter, Waldeyer has

never been able to find, but, on the contrary, has invariably succeeded in demonstrating, that tumors arising from these parts, and designated as primary cancer, were sarcomata, usually of the mixed form, the "round" and "fusiform" cell-sarcoma, whose elements are always connected with each other by prolongation.

Waldeyer has now examined upwards of two hundred tumors, the cancerous nature of which had been clinically established beyond a doubt. In all of these he found that the neoplastic, epithelium-like cell deposits were everywhere in connection with pre-existing epithelial structures; that they never originated either in migratory corpuscles, or fixed connective tissue cells, nor in the endothelium of the blood and lymphatic vessels, nor yet were indebted for their existence to a "generatio æquivoca."

These views of Waldeyer are sustained by the observations of others, particularly by a series of facts developed by Wm. H. Carmalt, of New York.

The development of cancer from the hair follicles, which Thiersch incidentally admits as possible, has been clearly demonstrated in three cases of cancer, respectively of the nose, eye-lid and cheek. The cancer corpuscles in these instances were plainly traceable to dilated and greatly distorted hair follicles as their source of origin; the sebaceous follicles were, as a rule, unchanged in the beginning, or at most simply enlarged, but through the progressive epithelial proliferation became finally obliterated. The first change observed was enlargement of the follicle, with an increase in the number of its external epithelial layers; next the formation of lateral projections of variable length, resembling in shape the acini of racemose glands; then alveolar distentions of these offshoots and proliferation of epithelial cells, and finally fully formed, isolated cancer alveoli, whose former connection with the tubular projections could not well be doubted. The surrounding connective tissue is, at first, scarcely changed at all; in the later stages, however, the cell proliferation of this tissue is occasionally so profuse, that the individual epithelial alveoli are scarcely to be distinguished amid the great mass of small, round and fusiform cells with which the connective tissue is densely infiltrated. In other instances the connective tissue forms merely a delicate framework between the large epithelial alveoli. Nowhere was the origin and development of the cancer corpuscles traceable to a proliferation of the cells of the connective tissue. This view, respecting the development of cancer from the hair follicles, finds support in the fact, already pointed out by Fuehrer, that frequent and bad shaving leads—upon the lips—to the development of this form of cancer, and that labial cancer is observed almost exclusively in men with shaven faces. Of some sixty cases of cancer of the lips, which came under observation in the Pathological Institute, at Breslau, two only were women, and not a single man with a full-beard.

The epithelial origin and development of œsophageal cancer, which so far had not been actually demonstrated, has recently also been observed by Carmalt in three cases. The great difficulty of furnishing proof to this effect is owing to the circumstance, that in soft cancers of internal organs, and more particularly of the œsophagus, the epithelial structures are exceedingly liable to become detached. In every one of the three cases above referred to the cancerous mass occupied the entire periphery of the œsophagus. Twice the demonstration of its epithelial origin was made upon the borders of the cancer deposit, and once upon two adjacent superficial papulæ; in the first two cases, the cones of the deeper strata of the epithelium of the mucosa—corresponding with the rete Malpighii of the skin—were found to have penetrated, by cell proliferation, into the submucous tissues,

where they had formed connections with the deeper cancer corpuscles. They were always distinguishable from the connective tissue proliferation. In the third case the excretory ducts of the mucous follicles of the œophagus participated in the proliferation, being distended to three or four times the normal size, and presenting peculiar irregular enlargements, similar in appearance to cancer corpuscles. Instead of the normal cylindrical epithelium, they contained from six to eight layers of large pavement epithelium

The view of Koester, that the cancer cells were derived from the endothelium of the lymphatics, Carmalt did not find confirmed, he having invariably found the endothelium intact and perfectly normal; never in a state of segmentation, or in any other condition pointing to proliferation of the same. The power of spontaneous motion of the cells of certain rapidly growing neoplasms—an item of great importance to the doctrine of metastatic deposits—has been demonstrated by means of a Stricker's warmed stage in two cases of mammary cancer, and a round cell cancer of the axilla. This spontaneous motion is, however, much more limited than that of the white blood corpuscles, and can be observed only at points where the cells are isolated.

[To be continued.]

HYPODERMIC INJECTIONS.

By D. M'Lean Forman, M. D., New Jersey.

Read before the State Medical Society.

My experience in the use of hypodermic injections has, during the past seven years, been quite extensive. While an interne in Bellevue and St. Luke's Hospitals, I seldom made my evening visit to my wards without a hypodermic syringe in my pocket; and as, in all large hospitals, there are a certain number of patients suffering from incurable and painful diseases, the syringe was often called into service to afford them temporary relief from their sufferings. For this class of patients, I believe the hypodermic injection of morphine affords greater relief from pain than can be obtained in any other way; and, in my experience, when thus administered, it is much less likely to produce the unpleasant remote effects, such as nausea, vomiting and constipation, which so often attends the administration of the drug by the mouth.

For the relief of acute pain, I have used it in many instances. In cases of renal and biliary calculi, during the passage of the stone, it has afforded speedy and marked relief from pain.

In intercostal neuralgia, and in the pleuritic pains so common in the advance stages of phthisis, a few drops of morphine injected at the seat of pain, affords marked relief.

In other forms of neuralgia, its administration for temporary relief has been attended by success.

In every civilized community there are a certain number of females who suffer from what may be termed malignant hysteria. In these patients there is no end to their aches and pains, and no region of the body that is exempt from them. In these cases, if after having exhausted the materia medica without affording them relief from their sufferings, the physician as a last resort makes use of the hypodermic syringe, he will be surprised to find what speedy relief he gives them; but he need not be surprised when in a few days he is again sent for to repeat the operation. The patient has at last

found something that will remove her pains, and at the same time produce a pleasant intoxication, and if she does not remove out of the reach of the doctor, her attacks will be so frequent, and her importunities for the use of the syringe so urgent, as to make him regret the invention of the instrument.

In cases of sciatica, its use has been attended by marked success. A single injection along the course of the nerve will often give the patient a comfortable night, and thus, by preventing the exhaustion induced by constant suffering, will greatly expedite recovery.

In cholera and cholera morbus, where the stomach is so irritable as to reject everything taken into it, the vomiting and cramps have in many instances been promptly checked by a single injection of morphine.

In a case of convulsions occurring in a patient who had been a long time sick with cerebro-spinal *meningitis*, the injection of morphine seemed to be of service; also in a case I saw of Dr. Vought's, in which the patient had from a dozen to twenty convulsions daily, depending upon an affection of the spinal cord, an injection of morphine, night and morning, reduced the number of convulsions to one or two, daily. Each time the morphine was omitted the convulsions increased in frequency.

In several cases of traumatic tetanus, the hypodermic injection diminished the number of convulsions, though the patient ultimately died of that disease.

In three cases of *puerperal convulsions*, the hypodermic injection of morphine was used. In two of these cases there were no convulsions after the injection was given, but as venesection was also employed immediately before the injection, we can not say how much was due to its influence. The other case was not benefited by them, the patient continuing to have convulsions until she died.

In two cases of flooding, one ante-partum, one post-partum, large injections of morphine were administered. The stimulating effect of the drug, when given in large doses, was immediate and very marked.

In using morphine for hypodermic injection, I always use what is known as Magendie's Solution.

For the relief of moderate pains, I rarely administer more than five minims of the solution.

For severe pain or convulsions, I give from fifteen to twenty minims; also about twenty minims after severe hemorrhage.

The point at which the injection is made, (except in cases of sciatica,) I think, makes but little difference. One patient suffering from elephantiasis of the leg, in about a year and a half received nearly one thousand injections in various portions of her cellular tissue. Cases requiring frequent injections are likely to be troubled with abscesses, if contiguous parts are too frequently injected. Abscesses occasionally follow a single injection. Thinking perhaps this might be due to the irritation produced by a fungus which developes in the solution of morphine after it has stood a few weeks, about a year ago I added a grain of carbolic acid to each ounce of the solution. This prevents the growth of the fungus, and the solution remains clear indefinitely. Since using this solution I have had no abscesses.

When medicine is used hypodermically, a much smaller quantity is required to produce the physiological effects of the drug than when administered in other ways. I do not think that morphine when used in this way is as apt to produce nausea, vomiting and constipation, as when given by the mouth. I have several patients who are always sickened by it when given by the mouth; but when given by hypodermic injection, it produces none of these unpleasant effects.

In cases of malarial fever, (intermittent, contracted at Panama,) I have used hypodermic injections of quinine in three or four instances. The fever

in each case was cured, but very troublesome abscesses occurred at many of the injected points.

In several cases of secondary syphilis, I have used calomel in glycerine as an injection. In these cases nearly every injection was followed by an abscess, and I do not know that this method of treatment possesses any advantage over the one usually adopted.

In three cases of varicose veins of the leg, I have injected a single drop of the liquor ferri persulph. in several of the most prominent points. These operations were entirely successful in curing the disease, and I regard this method as one of the most useful in the treatment of this affection.

RUPTURE OF HEART.

Reported by A. B. Tadlock, M. D., Knoxville, Tennnessee.

Eli Mathews, colored, æt. 80, "always known to be robust and healthy," died suddenly on the 21st January, 1875, of what was supposed to have been poison contained in a dose of medicine prescribed by a pretender totally ignorant of medical science. However, on post-mortem examination, the left auricle of the heart was found rent near the semilunar valves to the extent of about half an inch, through which nearly three pints of blood, by measure, had escaped into the pericardium, causing immediate death. There was also a rent in the septum of the auricles. The right auricle and ventricle contained blood and blood-clot; the left were entirely empty. The place of rent was found to be as thin as tissue paper. Internally the organ showed no sign of inflammation or fatty degeneration. Externally an unnatural amount of fat was attached to the apex and right half of the heart. Hepatization, extensive adhesions, and calcified bronchioles of right lung; left lung normal; no pericardial adhesions. Physically the subject was large, tall, and bony, but presenting a very lean appearance. After taking the medicine, before alluded to, and while sitting in his chair, he complained of feeling sick, vomited, and then remarking "I am dying," fell on the floor and expired.

The rarity of heart-rupture will no doubt make it interesting to note that the great and good Dr. Abercrombie, of Edinburgh, and the eminent Dr. Chalmers, died of rupture of the heart. George II. and the Duchess of Brunswick, who was his relative, died of the same. Han Allila also died of heart-rupture under peculiar circumstances. Dr. Quain collected 28 cases of ruptured heart, and says that 18 of them had the outer wall of the left ventricle ruptured, 3 the *right* ventricle, 1 the right auricle, 1 the septum between the ventricles.

Dr. Townsend's tables make heart-rupture "twice as frequent in men as in women," and shows that it very rarely occurs spontaneously before the age of sixty.

Cause.—Besides traumatic solutions of continuity, fatty degeneration, endo-carditis, myo-carditis, aneurisms and abscesses are regarded as the conditions consequent to which rupture most frequently takes place.

Symptoms.—Faintness, absence of pulse, syncope, cold extremities, collapsed features, præ-cardial pain, which we consider too manifest for experts to mistake for symptoms of death from apoplexy.

Treatment.—If death has not taken place immediately following the symptoms above given, authoritative evidence admonishes of the necessity of immediate advise for the patient, with speedy and positive treatment for

relief, and a grant of a few more days which, in the life of an individual, may often be of incalculable importance. Besides, though prognosis may be the most unfavorable, instances of traumatic lesion of the walls of the heart, with subsequent healing, warrant us in entertaining a hope that nature, assisted by well directed medical skill, may even here save life.

Selections.

EFFECT OF SINAPISMS, NITRITE OF AMYL, ERGOTINE, CHLOROFORM, AND OPIUM, UPON THE CEREBRAL BLOOD VESSELS.

Dr. Max Schuler (*Ber. Klin. Wochenschrift*, *Chicago Jour. Nervous Diseases*, Oct. 2, 1874) records some expeiiments demonstrating the action of sinapisms on cerebral circulation. He experimented with rabbits; the dura mater was laid bare, and through it the circulation of the pia mater could be distinctly observed. He found that *after* the *continued application of large sinapisms* the *cerebral vascularity* was *reduced.* When the greater part of the abdomen or back was covered with mustard, the frequency of respiration increasd at first with the pulse, while the vessels of the pia mater dilated regularly as its first influence began to be felt. Soon the calibre of the vessels began rapidly changing; a rapid contraction generally following the previous dilatation, lasting for a time, while the pulsations of the vessels became more and more indistinct until an equally sudden dilatation supervened. These changes continued for about ten minutes, gradually diminishing, leaving at last the vessels in a state of permanent contraction; the brain accordingly depressed; the frequency of respiration fell in one half hour one half; the pulse retained its frequency for rather a long time, being reduced in one half hour only four or five beats in one sixth of a minute.

After half an hour the mustard was removed and skin washed; the integument was reddened and tumefied. On cutting into it the subcutaneous tissue was found œdematous—tumefied into a tough gelatinous mass—its vessels and those of the corium bleeding freely. The cerebral vessels remained contracted after removal of the mustard, sometimes one and one half hours. During this period irritants ordinarily dilating these vessels had little effect.

In explanation of the above phenomena it is most reasonable to assume that in the beginning of the influence of the mustard there is a reflex paralysis of the vaso-mortor nerves, by an irritation of cutaneous sensitive nerves, whence the moderate dilatation. Subsequently, when relaxation of the cutaneous vessels and hyperæmia of the skin has been induced by the toxic action of mustard, a depletory influence on the cerebral vessels must be the result of this peripheral congestion, while the vaso-mortor paralysis has not yet passed off.

Effects of Amyl on Cerebral Circulation.

Dr. Schuler, experimenting with nitrite of amyl, as with mustard, was able to demonstrate the hitherto supposed action of this drug, viz: that it *relaxed* the *cerebral vessels.*

Thus it follows that good results are to be expected from the use of nitrite of amyl in all cases in which there is a morbid contraction of the arterioles of the brain.

Effect of Ergotine on Cerebral Circulation.

Continuing his observations, Dr. Schuler demonstrated that injection of

ergotine was followed by a powerful and continued vascular contraction at the place of injection, and in both the arteries and veins of the pia mater.

Antagonism of Ergotine and Nitrite Amyl.

Dr. Schuler found that ergotine would contract the cerebral vessels when they were dilated to their fullest extent. On the contrary, nitrite of amyl would not dilate vessels contracted by ergotine.

Action of Ergotine on Vascular Muscular Fibre.

Schuler found that ergotine would contract arterioles when the sympathetic nerve supplying these arterioles was divided. Thus, we have direct proof that ergotine acts on the muscular fibre of the arteriole.

Effect of Opium on Cerebral Circulation.

It was found that opium produced a primary dilatation of vessels at the place of injection, and of the pia mater. But soon the cerebral vessels undergo a contraction, and the brain collapses. The dura mater is raised moderately by the increased cerebro-spinal fluid. After narcosis a moderate dilatation follows.

Effect of Chloroform on Cerfbral Circulation.

It produces a primary contraction of the arteries of pia mater, and subsequently of the veins, with relaxation of the pulse. Soon there follows an increasing relaxation of arteries and veins, and finally an excessive venous stasis amounting to actual "cyanosis." The arteries assume a darker color from the venous character of the blood. The pulse rises somewhat, after a time, to sink again on continued inhalation; but the calibre of the vessels does not change. The admission of fresh air turns the blood red again and changes the calibre of the vessels.

Nitrite of amyl can remove the effects of chloroform on cerebral vascularity in a short time. The arteries dilate, assume their normal color, the veins likewise, the respiration becomes more frequent and unimpeded.

This restoration by nitrite of amyl will succeed even after a very prolonged action of chloroform, though with less vigor. Similar results are obtained after division of the vagus. Neither the action of nitrite of amyl nor chloroform on the cerebral circulation is affected by the sections of the vagus.

THERAPEUTICAL PROPERTIES OF BROMIDE OF CAMPHOR.

Some experiments of this drug by Bourneville, of Paris, are quoted in the London *Medical Record.*

The form of the drug administered was the same as that which had been employed up to the present time in all the hospitals of Paris: Dr. Clin's bromide of camphor dragees. In addition to the physical properties of bromide of camphor already mentioned, its characteristic odor and disagreeable flavor, it may be noted that it is insoluble in water, and changes when exposed to the air, so that the dragees are the best form in which to administer it. Each dragee contains exactly ten centigrammes (one and one half grain) of the bromide of camphor, covered by a thin coat of sugar, which preserves the drug, masks both its odor and flavor, and renders it easy of deglution. These dragees become rapidly disintegrated in the stomach.

Among the cases already published we find the following:—

In one case, a women aged sixty-two, suffering from heart disease attended by insomnia, twenty centigrammes only (two dragees were afficacious.) In

a case of a women aged forty-six, who was suffering from progressive locomotor ataxy, in whom insomnia alternated with disturbed sleep troubled by nightmares, it was necessary, in ordor to obtain a decided improvement, to administer eighty centigrammes (eight dragees). A woman aged forty-six, who for six years suffered from chorea, who had not been able to walk for a year, and was tormented by such incessant and violent movements that they drew her out of bed, and who was unable to sleep, had administered to her as high a quantity as one hundred and twenty centigrammes (twelve dragees). Her sleep became calmer, she remained quietly in her bed, could walk a little, and often remained fifteen or twenty minutes undisturbed by choreic movements.

Three women, under the care of M. Charcot, of the respective ages of fifty, sixty, and sixty-seven, were attacked by paralysis agitans, and pronounced incurable. They took from twenty centigrammes to one gramme (three to fifteen grains) of the bromide of camphor, daily, in quantities varying from one to ten dragees, in progressive doses. A marked amendment followed.

Bourneville (*Progress Medical*) has submitted the efficacy of bromide of camphor to a severe test, by choosing as a field for his experiments a hospital for incurables. If it succeeded in these obstinate cases, still greater was the probability that it would act beneficially where the conditions were more favorable, and the illness of more recent origin. A patient in the Hospital de la Pittie, twenty-four years of age, suffering from acute rheumatism was attacked by chorea in the left arm. He was cured in five days. The dose was sixty centigrammes (nine grains) daily, given in six dragees.

In the same hospital a women aged twenty-two was attacked by violent hysterical chorea, with hysterical vomiting. The dose given was first forty, and then sixty centigrammes daily. Her cure was rapid.

A young women, a patient in the Neckar Hospital, suffering from induration, with insufficiency of the mitral valve, showed symptoms of poisoning from the first day digitaline was administered to her. The digitaline was discontinued, and bromide of camphor substituted. The heart beats diminished in frequency and became regular. The medine was relinquished, and the improvement obtained continued the same a fortnight later.

A man in the same hospital, presenting the same conditions, received equal relief.

TREATMENT OF BURNS AND SCALDS.

The following observations by Dr. John Morris, of Baltimore, in *The Sanitarian*, may be read with benefit:

The first step is to remove the clothing from the patient. As rest is all-important, this should not be done by the old plan of taking it off piece by piece, but by removing it by a few skillful cuts with a knife or scissors. The patient should then be instantly wrapped in a blanket, or blankets, or large masses of cotton, if at hand, so as to create heat, and thus re-establish the circulation.

Patients frequently exhaust themselves by their outcries, and to guard against the depression of nervous force, brought about by this cause, anæsthetics should at once be employed. Chloroform or ether should be administered in sufficient quantity to induce partial, or, if necessary, complete unconsciousness. If these agents are not at hand, large doses of opium should be given. This is all important, as the patient must not be allowed

to suffer if we wish to conserve the powers of life. The dressing should be made while the patient is in this state.

Carron oil is utterly useless, if not injurions. Of all the oils, linseed, in our opinion, is the worst, as it is the soonest to be absorbed by the atmosphere, and become dry. In cases of bad scalds of children, in which a large part of the body is involved, we know no dressing so good as a bran bed, that is, a bed of bran, in which the patient may lie, and be entirely covered with a thick investment of the same. This dressing has the advantage of not requiring change, for each day, as the moist particles fall off, they can be replaced with fresh bran, without disturbing the patient. One of the severest cases of scald we ever met recovered by this treatment.

A great deal of harm is done to patients by frequent dressings, and any method that obviates this is most desirable. Patients frequntly are exposed for hours to the action of the air, suffering unnecessary pain, by the old and tedious process of dressing. The air itself does no injury, but the extreme hyperæsthesia of the skin produces a state of nervous tremor which leads to exhaustion. Any one who has seen a case of hydrophobia can readily understand this condition of skin hyperæsthesia.

In burns of the extremities there is no immediate application so serviceable to relieve pain as hot or cold water, and, strange to say, they act equally well. If the appliances are at hand, the cold bath as practiced by Hebra is the best. Those who have visited his wards in Vienna, and seen his treatment of burns by a bed made of straps, in a cold bath, can bear witness to the successful and scientific character of this procedure. For small burns, warm water acts admirably.

We have said before, that anæsthetics should be employed in all burns of an extensive character, but, before their effect is allowed to pass off, applications should be made to produce anæsthesia of the parts affected. We have heretofore used for this purpose a solution of Labarreque's chloride of soda, of the strength of an ounce to a pint of water, adding two or three grains of morphia to the solution. This has generally given great relief to the patient—indeed, in a short time, destroying all the extreme sensibility. Carbolic acid has been highly recommended as a local anæsthetic, and it may be possible that a solution of it in water, in combination with morphia, might act still better.

After a free application of either of these solutions, the parts may be thickly covered with cotton batting. This helps to counterbalance the chilliness, and gives a comparative degree of comfort.

In superficial burns, of a limited extent, nothing is required but simple cold-water dressing.

Brandy should not be administered whenever opium or ether can be obtained, as it remotely exercises a depressing influence. Strong hot coffee is the best drink that can possibly be given to counteract nervous exhaustion, or remedy the effects of shock. If brandy is given at all, it should be given with coffee. All earthy applications, such as chalk, calaminaria, etc. should be avoided, as they are not only therapeutically inert, but may interfere with the process of restoration.

Local stimulation, such as the application of turpentine, or a solution of nitrate of Silver, as practised at St. Bartholomew Hospital, is no doubt proper treatment in the second stage of burns, but as this belongs more especially to the domain of surgery, we forbear to discuss it, as well as the treatment of the after consequences of burns, such as ulceration of the bowels, particularly of Peyer's glands, congestion of the lungs, cicatricial contraction, etc.

In conclusion, we will briefly sum up the recommendations before suggested:

1. Remove the clothing by cutting it from the body.
2. Wrap the patient in blankets.
3. If pain be excessive, administer chloroform, ether, or large doses of opium, and let the necessary dressing be made while the patient is in a state of partial or total insensibility.
4. Produce anæsthesia of the burned or scalded parts by the application of a solution of carbolic acid and morphia. (This solution can be made in almond or olive oil.)
5. After this, wrap the patient in masses of cotton batting.
6. Avoid brandy, and give coffee as a stimulant.

If these simple rules be followed, much suffering may be alleviated, and many a life saved, which otherwise would be lost by the ignorance and mismanagement of attendants.—*Medical and Surgical Reporter.*

ON DISEASES OF THE HEART.

By Dr. ARNOLD, before the Baltimore Medical Association.

Writers classify them as functional and organic, and the symptoms of the former are frequently more marked than those of the latter. In functional diseases palpitation is very conspicuous. The disturbance may be in regard to force, to frequency or to regularity. Force may be of intrinsic origin, as from morbid innervation of the heart itself. This cannot be demonstrated clinically, or by *post-mortem*, but the functions of other organs are affected by the condition of the nerves, and we are justifiable in supposing that the heart is also. Usually, however, it is of reflex origin, as from tea, coffee, dyspepsia in nervous females. In Bright's disease there is frequently hypertrophy of the left ventricle, of which it is difficult to say how it is brought about. Some say that the blood acts as an irritant; others, that there is stenosis of the blood, which makes increased propulsive power necessary. In these cases palpitation is sometimes seen. The causes of disturbed *rhythm* are numerous, as emotional excitement, disease of cerebral system, gastric disturbance and dyspepsia. The causes are present in every person, but, as it only occurs in a small proportion of persons from sympathetic or pneumogastric disturbance, we have to admit a peculiar idiosyncrasy. Another form of heart disturbance is characterised by morbid sensibility referred to the heart itself: there is precardial anxiety, sinking, constriction of the chest, neuralgic pain, and a feeling of impending dissolution. This has been ascribed to disturbance of the sympathetic or cardiac plexus.

Can the heart be subject to cramps, tremors or fluttering? I think it can, as well as any other involuntary muscle. Young persons who grow too fast often complain in this way. Experiments of this kind have been made on fasiculi of the cardiac muscles and tremors produced. Thus angina pectoris, although it may be produced by ossification of coronary arteries, or disease of the valves, etc., has been proved by post mortem examinations to be in some instances at least functional. Functional diseases have no morbid anatomy. I am an organicist, and believe that no functional disturbance can occur without some pathological change, although it may not be discovered. In the examination of persons complaining of disorder of the heart, if we find no adventitious sounds nor hyperthrophy, we conclude that the disease is not organic. This conclusion is too hasty, for there might be changes in the chorda tendinæ which would give no murmur, and in mitral regurgitation the murmur may be absent at times, dependant upon the con-

dition of the blood. The clinical history of fatty or flabby heart is hard to make up. I have seen some cases, in old persons, in which no morbid sounds could be detected, who died suddenly.

In the treatment of increase of force of heart, the cause must be studied. It is hardly a serious matter under any circumstances, and requires no special treatment. The rhythmic form of functional disorder, if it continue for any lenghth of time, is not a trifling affair, and may at any moment become serious. Sometimes these cases terminate fatally; anæmia is frequently present and then iron is indicated. In robust persons a somewhat reducing mode of treatment must be pursued.

Of organic diseases, aortic regurgitation is the one that most frequently leads to sudden death. It ought to be borne in mind that digitalis is a most dangerous remedy, as it retards the heart's action, and fatal paralysis may result. In hypertrophy or dilatation of the left ventricle, as well as in mitral regurgitation, digitalis is very useful. These cases will do well as long as the organ is well nourished, but when nutrition fails, disastrous results ensue. Digitalis must be used with caution. It is said to be useful when dropsy takes place. Congestion of lung is very apt to follow, and I think more cases of pulmonary apoplexy are produced by mitral insufficiency than by any other cause. As we have no means of curing an organic disease of the heart, the treatment must be governed by the symptoms. Fatty degeneration is frequently followed by hypertrophy, and in these the best and only remedy is an alcoholic stimulant. Digitalis is dangerous in these cases; other stimulants are not to be compared with alcohol.

Dr. Chew said there is one form of palpitation which is produced by impairment of power of the pneumogastric. The contractions of the heart are produced by the sympathetic, while the pneumogastric is inhibitory in its action. Any impairment of the power of the pneumogastric will lessen this inhibitory influence. This is frequently seen in dyspeptic persons. I cannot agree in regard to the inadmissibility of digitalis in aortic regurgitation. It is frequently associated with a dilatation of the left ventricle, and it is in just this dilated condition that digitalis is useful. It should be given in small doses and carefully watched. Dr. Arnold says—"I hesitate to give it on account of its cumulative character, and we cannot always watch it. I have seen it used in some of these cases with very bad results. It is frequently useful in functional disease."

THE ANTAGONISM BETWEEN MEDICINES.

The following extracts are taken from a report of a committee of the British Med. Association, detailed to investigate the antagonism of medicines, by J. Hughes Bennett, M. D., chairman.

Sulphate of Atropia and Meconate of Morphia.

In this investigation eighty-one experiments were performed on rabbits and dogs. The experiments on rabbits were summed up as follows:

1. Sulphate of atropia is physiologically antagonistic to meconate of morphia, within a limited area.

2. Meconate of morphia does not act beneficially after a large dose of sulphate of atropia, for in these cases the tendency to death is greater than if a larger dose of either substance had been given alone.

3. Meconate of morphia is not specifically antagonistic to the action of sulphate of atropia on the vaso-inhibitory nerves of the heart.

4. The beneficial action of sulphate of atropia in cases of poisoning by

meconate of morphia is probably attributable to the action which the former substance possesses of contracting the blood vessels, and thus diminishing the tendency to cerebral and spinal congestion produced by salts of morphia.

The experiments on dogs showed that sulphate of atropia modifies the physiological action of meconate of morphia, and may even save life after a fatal dose of the latter. The limit, however, is so narrow as to be of no practical value.

Tea, Coffee, Theine, Caffeine, Guaranine, on the one hand, and Meconate of Morphia on the other.

In the investigation one hundred and seventeen experiments were performed.

1. Theine is antagonistic to meconate of morphia, inasmuch as the action of the one substance modifies that of the other, and may even save life from a fatal dose of either substance.

2. Meconate of morphia delayed the appearance of the convulsions characteristic of the action of theine; but, on the other hand, theine, if given in large doses, did not affect in a marked degree the action of meconate of morphia, because symptoms of poisoning by theine were soon manifested.

3. Further experiments on cats showed that (*a*) while a cat may recover from the effects of a dose of $1\frac{3}{4}$ grains of meconate of morphia given alone, it will not recover from the effects of a dose of 2 grains, even although the effects of the latter dose are modified by those following the introduction of 4 or 5 grains of theine; (*b*) that in three cases the animals recovered from the effects of $1\frac{7}{8}$ grains of meconate of morphia and four to five grains of theine, while they died when the same dose of meconate of morphia was administered eight days afterwards; (*c*) that, when the dose of theine was increased beyond five grains, the animals invaribly died, apparently from the effects of theine

4. Experiments on rabbits, as to the antagonism between meconate of morphia and theine, were fourd to be nnsatisfactory as regards the purposes of this inquiry, because both drugs produced epileptiform convulsions in these animals.

5. The results obtained in investigating the action of caffeine and guaranine as antagonists to meconate of morphia were similar to those observed with reference to theine.

6. Experiments were made on dogs to ascertain the effects of strong infusions of tea and decoctions of coffee as antagonists to meconate of morphia. These were unsatisfactory, chiefly because the tea or coffee was usually vomited so soon as to prevent the possibility of the exercise of any physiological antagonism. At the same time it was observed in several instances that the administration of tea or coffee so exited the animals as to prevent them from falling into stupor or coma after a dose of meconate of morphia, which would have produced this effect had the tea or coffee not been given—*British Med. Journal*, Jan. 23, 1875.

NEW YORK SOCIETY OF NEUROLOGY AND ELECTROLOGY.

Adjourned Stated Meeting, February 2, 1875.

The President, Dr. Meredith Clymer, in the Chair.

The special order was a paper on "Partial Paralysis and Want of Coordination from Irritation of the Genital Organs," by Dr. Lewis A. Sayre.

Dr. Sayre referred to a paper "on reflex paralysis, caused by congenital

phymosis and adherent prepuce," which he had presented to the American Medical Association in 1870. He read extracts from letters received from Mr. Barwell, of London, Dr. Pitcher, of Detroit, and others, confirming the views therein set forth, and relating similar cases coming under their observation, but the nature of which, until then, they had not understood. So many like cases, he said, had since then come under his notice, that he thought it proper to bring the subject again before the profession more fully, as he was satisfied there were many grave affections of the nervous system attributable to this cause, whose nature has not as yet been suspected. He had no theory of explanation to offer; and he hoped that some light might be thrown on the subject by the members of the society. It had seemed to him that in many cases an anæmic condition of the spinal cord obtains, as some of the patients lose entire muscular power, even the power of speech, in the erect posture, and yet, lying on the back for a little time, they recover the power of speech and motion.

Eight cases were then related among both sexes, illustrating the peculiar effects of continued irritation of the genital organs, such as retention of urine, general motorial paralysis, paraplegia, complete and partial, paralysis of the special senses, spasms, clonic and tonic, idiocy, etc., etc. The most marked peculiarity of all these cases has been that almost immediate improvement, without any mechanical contrivance to correct the deformity, on relieving the genital irritation, would happen directly; decided improvement would sometimes be noticed within twenty-four hours, and, in most, complete recovery in the course of a few days.

And in view of the absence of those members of the society who were best able to discuss this interesting question, as well as to make further case contributions, he would suggest that the discussion on the paper be made the order at a subsequent meeting. He had not himself seen cases similar to those mentioned by Dr. Sayre, but he had, since his attention had been first called to the subject, some twenty years since, seen a great variety of nervous troubles, both of motility and sensation, unquestionably ascribable to continued irritation of some one of the genital organs, and that in both sexes, and at all ages. Many persons had been sent to him for treatment, suffering from more or less loss of motor power, and with increased, lessened or perverted sensation, supposed to be from some disease of the nerve-centres, in which he had found the origin of the symptoms either in the urethra, bladder, uterus, ovaries, or external genital organs of the female. On the removal of the local trouble, the nervous troubles disappeared without special treatment. In stricture of the urethra this was a frequent state of things. He had seen a great many cases which had been treated for diseases of the spinal cord unsuccessfully for a long time, in which the paresis anæsthesia—a hyperæsthesia—disappeared as soon as the stricture was cured.

With regard to the nature of the disease, Dr. Sayre had said that he had no theory to maintain: he was not prepared to say whether there was anæmia or hyperæmia of the cord. Now he (Dr. Clymer) had serious doubts whether the morbid expressions were due to either condition. That either one or the other existed there was a proof; and there was much in favor of a belief that the vascular system of the cord and its coverings was not concerned, or if so, only secondarily. He believed that the present tendency to implicate the circulation of the cord or brain, or their membranes, in the pathogeny of so many of the functional diseases of the nervous system was an error. He thought that in such cases the nerve cells, sensory and motory, were themselves in fault; that the irritation impinged directly on them. He thought, in the class of cases just mentioned by Dr. Sayre, this was

shown by the rapidity of the disappearance of the nervous troubles after the peripheral irritation had been removed.

After some remarks by Dr. Farnham and others, the discussion was adjourned to March 15th.

CASES OF CHRONIC SIMPLE ULCER OF THE STOMACH.

By Dr. McSwiney, Med. Society, Dublin.

In the course of his remarks he pointed out that this was a painful, dangerous, and sometimes a fatal disease, which was met with chiefly in young females between 16 and 26 years of age, and the features of which physicians had to be well acquainted with in order that they might distinguish it when they met it, and treat it successfully. Having traced the history of the disease from the time—1830—when it was first distinctly recognized and described by Cruvelhier, down to the present time, he proceeded to read some cases in which he had diagnosed the existence of this lesion. The first case was that of a young woman, æt 23, a French polisher by occupation. Four years ago she had distress of stomach after taking food, loss of appetite, and suffered from various dyspeptic symptoms. These were succeeded by epigastric pains, nausea, and thirst; the pain was ensiform in location. To relieve it, she lay with the abdomen and face under. Food made the pain much worse, more particularly solid food. After some weeks of suffering she was suddenly seized with a violent attack of hæmatemesis. From this she slowly recovered in some weeks, after which she remained well for two years, when again there was a recurrence of all the dyspeptic symptoms under which she in the first instance laboured and again she had a large vomiting of blood. When received into the hospital she was weak and pallid, and the slightest pressure in the epigastric region immediately below the ensiform cartilage caused excruciating pain. She loathed food and was wretchedly depressed and nervous. Whatever she swallowed, solid or liquid, caused pain, and was immediately rejected by vomiting. Alcohol in any form made her worse, and everything, even the plainest food, was vomited. She was placed under treatment, and at the end of four or five weeks left the hospital, being at the time apparently quite restored to health. Three other cases, in all important particulars similar to the one just related, were also reported by Dr. McSwiney. Finally he reported a case by way of contrast to the others, in which many of the symptoms simulated, upon superficial observation, those of gastric ulcer, but which he had differentiated upon the occasion of examining the woman carefully. Shortly, the woman was of a nervous temperament, and had been highly excitable, according to her own account, for years. Amongst the symptoms of which she complained was regurgitation of food, which occurred at irregular intervals. At this time she was free from pain in any part of her body. This food-vomiting came on chiefly at the catamenial periods, which were scanty and irregular. She suffered from leucorrhœa for months, during which she suffered from this regurgitation of food, and according to her account, much pain was experienced, but this pain was variable in situation—referred now to one point and now to another, and was uninfluenced by food. Two months ago she stated that she vomited everything she took, and that the vomited matter contained blood, and she showed what purported to be an admixture of food and blood to the practitioner who was in attendance upon her. All this time, however, she remained in good condition; she was not in the least weak or wasted, nor

had she the appearance of a person suffering pain. Somehow an idea had got about, that she had ulcer of the stomach, and she appeared willing to favor this view. A thorough investigation of this case caused Dr. McSwiney to conclude that, notwithstanding the vomiting of food mixed with blood, and the pain complained of, the case was not one of gastric ulcer at all, but should be referred to the category of hysterical affections, and he stated that, in point of fact, what occurred when the food was brought up was more analogous to ruminating than to vomiting, and referred to the graphic description of this affection given by Sir Henry Marsh in his well known article in the *Dublin Journal*, as well as in his letter to Dr. Little. Dr. McSwiney next directed attention to the diagnosis which he had ventured to arrive at in these cases, and explained that, whilst he recognised the impossibility in some cases, and the difficulty in others, of arriving at a positive diagnosis of gastric ulcer, he claimed at the same time that under certain circumstances that diagnosis could be surely and unhesitatingly made. The grounds for arriving at this diagnosis, he declared, were supplied by certain important symptoms which, when present, could denote no other malady. These symptoms were—pain, vomiting, derangement of the digestion, and hæmorrhage. In addition, he stated that the age, sex, and, in his opinion, the state of the menstrual function afforded valuable aids towards perfecting the diagnosis. Having at some length remarked upon each of these heads, he next proceeded to discuss the etiology of the disease, referring to the labors of Rokitansky, Virchow, Pavy and others who had advanced knowledge upon the subject to its present stage. Finally he recapitulated the number of items of treatment which he had been accustomed to rely upon. It was as follows: *Regiminal*—He enjoined rest in bed, and secured the repose of the stomach by allowing only small quantities of nutriment to be taken with long intervals between. Such nutriment consisted of milk with soda-water, or lime-water, and clear-strained beef-tea. *Medicinal*—He prescribed opium to allay pain, gallic acid to arrest hæmorrhage or other discharges, and bismuth, in a formula which he recited, to arrest and cure that ulcerative process. He expressed an opinion that bismuth in the form of the liquor bismuthi possessed something approaching a specific curative action in gastric ulcer, and he suggested that this might be due to the alkalinity of the solution, which restored, perhaps, the equilibrium in the chemical economy of the gastric processes which had been disturbed by the initiatory pathologic changes which determined the formation of the gastric ulcer.—*Canada Lancet.*

SURGICAL NOTES.

Guys Hospital.

As in matters of mere worldly interest, we cannot in the practice of medicine and surgery afford to despise the day of small things. At a recent visit to Guy's we had an opportunity of observing some striking illustrations of the importance of attending to minute and apparently trivial details in surgical diagnosis. An old man, about seventy years of age had fallen down, and sustained some injury about the upper part of the thigh near the hip-joint. He was unable to walk, and was therefore taken to the hospital, where he was admitted into Job ward. There was some shortening of the right lower extremity, and great impairment of movement. The actual nature of the disease was not apparent, but it was probable that there was fracture at the neck of the femur. To ascertain definitely what was the

seat of the shortening, Mr. Bryant adopted an ingenious, and, we believe, novel device. The measurements from the tip of the trochanter major to the lower border of the patella were first taken, and found to be equal on both sides. The question therefore was whether the shortening was at the neck of the femur. For this purpose, the patient being in bed, a vertical line was drawn from the tip of the anterior superior iliac spine on the outside of the hip to the horizontal plane of the body, then a second line from the tip of the trochanter major was drawn at right angels to this vertical line. The length of the second line was then measured and found to be three-quarters of an inch shorter on the injured side than a similar line on the opposite side of the body. By this means it was incontestably shown that the shortening of the limb was entirely in the neck of the bone. Mr. Bryant has employed this mode of determining the shortening of the neck of the femur for some time past, and has found it of great utility. We refrain from saying more on the matter at present as we understand that a paper on the subject, illustrated by diagrams, will shortly be read at a meeting of the Medico-Chirurgical Society. It seems, however, that "Bryant's line" will henceforth be as important in determining shortening at the neck of the femur as "Nelaton's line" is in the diagnosis of dislocation of the head of the bone.

At the same visit we saw some cases in which the cleft of the soft palate had been very accurately closed by a slight modification of the usual operation. Mr. Bryant remarked that after paring the edges of the soft palate, there is often great difficulty in getting perfect apposition after passing the needles carrying the sutures. To obviate this difficulty the needles with the sutures were passed first, then the edges were pared and brought accurately into position. In the three or four cases in which this modification has been employed the success has been gratifying.

There is at the present time an interesting and remarkable case in the Astley Cooper ward. About two months ago, a boy, aged eighteen, was standing on a stack of hides, when a man caught him by the right leg, and endeavored to pull him down. The patient strongly resisted and felt something suddenly snap in his right groin. He immediately experienced great pain, was unable to walk, and in two hours found a swelling in the right groin, close to the pubes. Beyond the swelling in the groin nothing amiss was found when the patient was admitted into the hospital. After being in the hospital for about three weeks the patient felt a hard mass extending from the swelling in the groin into the right inguinal and hypogastric regions, just above the brim of the pelvis. The tumor has gradually increased in size, and now extends up to the umbilicus To the touch it is somewhat nodular and semi-elastic. The bladder seems to be pushed over to the left side, and lies just above the pubes. From the history and the characters of the tumor it is feared that it is a medullary growth.—*The Lancet.*

GENERAL SUMMARY.

From Pacific Medical and Surgical Journal.

Adulteration of Quinine.

That this drug is often adulterated to a considerable extent is pretty well known; but few of our readers will be prepared for the shameful instance we are about to relate. One of our staff, some time ago, purchased a drachm of quinine at a respectable-looking chemist's shop in a large London thoroughfare. On putting a few grains into water, it appeared slightly to ever-

vesce, and his curiosity being thereby excited, an analysis was made, which revealed that this so-called quinine was a mixture of two parts of quinine with one of carbonate of soda. We record the fact as a most disgraceful fraud, and would suggest that public analysts might advantageously turn their attention to expensive drugs.—*The Doctor.*

Acne in a Child from Bromide of Potassium taken by the Mother.

A case is reported in the *London Laucet*, by Dr. Tilbury Fox, of a child three months old affected by an eruption of acne, which was referred to the use of bromide of potassium by the mother. She had taken it for more than a year for epilepsy, with no such effect on herself. That the eruption was thus produced was rendered clear by its disappearing whenever the mother ceased to nurse the child.

Combination of Iodide of Potassium and Carbonate of Ammonia.

Sir James Paget wrote: "I have had extensive experience in the treatment of syphilis with this combination, and have realized the best results. I find that five grains of iodide of potassium combined with three grains carbonate of ammonia, are equal to eight grains of the potassium salt administered in the ordinary way."

Subdermic Action of Atropia and Morphia.

The following conclusions arrived at by Drs. Mitchell, Keene and Morehouse, of Philadelphia, appear to be well established:

"1. Conia, atropia and daturia have no power to lessen pain when used subdermally.

"2. Morphia thus used is of the utmost value to relieve pain, and is most potent, in certain forms of neuralgia, the nearer it is applied to the seat of the suffering.

"3. Morphia lowers the pulse slightly, or nor at all. Atropia usually lowers the pulse a few beats within ten minutes, and then raises it twenty to fifty beats within an hour. The pulse finally falls about the tenth hour below the normal number, and regains its healthy rate within twenty-four hours.

"4. Morphia has no power to prevent atropia from thus influencing the pulse; so that, as regards the circulation, they do not counteract one another.

"5. During the change of the pulse under atropia the number of respirations is hardly altered at all.

"6. As regards the eye, the two agents in question are mutually antagonistic; but atropia continues to act for a much longer time than morphia.

"7. The cerebral symptoms caused by either drug are to a great extent capable of being overcome by the other; but, owing to the different rates at which they move to affect the system, it is not easy to obtain a perfect balance of effects; and this was made the more difficult from the fact already mentioned, that atropia has the greater duration of toxic activity.

"8. The dry mouth of atropia is not made less by the coincident or precedent use of morphia. Atropia does not constipate and may even relax the bowels; morphia has a reverse tendency.

"9. The nausea of morphia is not antagonised or prevented by atropia.

"10. Both agents cause dysuria in certain cases, nor is the dysuria occasioned by the one agent relieved by the other.

"11. Atropia has no ability to alter or lessen the energy with which morphia acts to diminish sensibility or relieve the pain of neuralgic disease.

"12. As regards toxic effects on the cerebral organs, the two agents are

mutually antidotal; but this antagonism does not prevail throughout the whole range of their influence, so that, in some respects, they do not counteract one another; whilst, as regards one organ—the bladder—both seem to affect it in a similar way."

Cure of Intussusception by Enemata.

Dr. B. C. Smith (*Atlanta Medical Journal*), thinks that most cases of invaginated intestine, and many of hernia, are curable by the distension method, if it is pushed sufficiently. He pumps water into the bowels to the extreme endurance of the patient, then desists for a few minutes, preventing its escape in the meantime, and then resumes the pumping, and so on till the obstruction yields. The effect of the distention in an upward direction, he says, is illustrated by the effect on hemorrhoidal tumors, which, though in a state of protrusion and congestion, will be readily drawn in by distending the colon with water.

ACTIVE DILATATION OF THE BLOOD VESSELS.

The contraction of the smaller arteries through nervous agency has now been demonstrated by so many experiments, and is so entirely in accordance with the results of anatomical and microscopical examination, that it may be regarded as one of the best established facts in physiology. Within the last few years a special name—the vaso-motor system of nerves—has been applied to them; and quite recently a very interesting course of lectures has been delivered upon them by Professor Vulpian before the faculty of medicine in Paris. We shall not follow him in his *apercue* of the principal events in the history of these nerves, nor adduce any of the facts he has so diligently collected in proof of their power of effecting contraction of the vessels, but shall refer only to the phenomena of *active dilatation*, and the various theories that have been advanced to account for it. That such dilatation can be effected through the nervous system is unquestionable. In the first place, we have the experiments, often repeated, of Bernard, on the effects of irritation of the chorda tympani, or of its peripheric extremity, when divided, on the circulation and secretion of the submaxillary gland. After such irritation, the vessels dilate, the flow of blood is freer, the pressure rises, and the secretion of saliva is augmented. Similar effects were observed by Bernard in the parotid on irritation of the auriculo-temporal of the fifth, and also—though his experiments on this point have not been corroborated by subsequent observers—on irritation of the peripheric extremity of the cut vagus in the kidney; in this instance the vessels of the kidney becoming enlarged and the flow of urine increasing. Finally, we have the experiments of Eckhard on the *nervi erigentes*, irritation of which is followed by dilatation of the vessels of the penis and erection. Amongst the various theories that have been put forward to explain these facts, that of Schiff may first be mentioned, who believes that, as there are nerves which, by their action cause muscular fibre to shorten, so there are others, the direct action of which is to cause it to lengthen. It must be admitted, however, that no corroborative evidence can be obtained to support this view, and that all known physiological facts in regard to the action of nerve on muscle are opposed to it. As M. Vulpian observes, the term "active dilatation" is somewhat misleading. If it means only that dilatation follows nervous excitation, nothing can be better; but if, by it, we mean that the nerve-fibres act directly on the muscular fibres, the proposition is inad-

missable. In regard to the arteries the difficulty can not be overcome by supposing that the nerves act by shortening them, and so increasing their calibre; for they contain no longitudinal fibres. A second explanation that has been offered, is, that a constriction of the veins, returning the blood from the part, is effected by nervous irritation; an obstruction to the flow of blood is thus produced, the effect of which, traveling backwards, leads to enlargement, first of the capillaries, and then of the arteries. It so happens, however, that the veins can be shown to dilate as well as the smaller arteries, and the pressure of the blood as well as the rapidity of the circulation increases, which are facts at variance with the explanation. M. Legros has endeavored to explain the action of the dilator nerves in another manner. He maintains that, in the ordinary condition of the circulation, the arteries are the seat of peristaltic movements passing towards the periphery; and he thinks that the excitation of these nerves exaggerates the activity of these movements. But this has met with little favor, especially as the existence of the peristaltic movements has not been perfectly established. Brown-Sequard, again, maintains that the dilatation of the vessels on nervous irritation is not primary, but secondary, and is dependent on the action of the nerves on the anatomical elements of the tissues; und thus there is, as Carpenter has endeavored to demonstrate, a *vis a fronte.* But Bernard has shown that dilatation precedes the secretory action of the gland; and V. Wittich has pointed out that, in curarised animals the secretion is abolished before the nerves lose their power of dilating the vessels. The last, and it appears to us the best, explanation is that given by M. Vulpian himself. The phenomena he maintains are those of inhibition. Under ordinary circumstances the vessels are kept in a permanent state of contraction or tone by the vaso-motor nerves. These present in their course and near their extremities certain ganglia; and connected with these ganglia are other nerves, possessing an inhibitory or restraining power over the generation or discharge of their motor force. If these be excited, the action of the ganglia is suspended, and the vessels, no longer receiving the force requisite for their contraction, yield to the pressure of the blood, and undergo dilatation. The analogy here exhibited to the motor and inhibitory nerves of the heart is sufficiently striking, and most, if not all, the phenomena of active dilatation of vessels receive a satisfactory explanation on this supposition.—*The Lancet.*

TUMORS OF THE FACE.—PARASITES OF THE FEMALE BREAST.

Lymphatic Tumors of the Face.

Dr. Leoni describes a remarkable sort of affection that occurred in his own person, and the nature of which he can only suspect. One day his right upper lip commenced to swell until it became a tumor of considerable size. He could assign no cause for it, for he had received no injury there, nor had there been previous trouble of any kind. The swelling was not painful, but gave the sensation of great tension, as if it was in a state of erection. At the end of two hours it had disappeared as suddenly as it came. Subsequently similar swellings occurred on two occasions, once in the same place, and once in the lower lip and chin, lasting in this last case from three to four hours. He tried in vain to reduce them by pressure and manipulation, and finally introduced an exploring needle through the mucous membrane of the mouth, thinking to evacuate the contents, if they were fluid. Nothing, however, escaped. Leoni thought there was no evidence to show that the tumors contained blood. It seemed more likely that they were

lymphatic in character, and produced by some obstruction in the course of the lymphatic vessels.

We had observed the same affection, in a less degree, in a young woman, at the commencement of her menstrual epoch.—*Nord. Med. Ark.*, vi. 2, 1874.

THE PARASITES OF THE FEMALE BREAST.

In a recent work, Dr. Haussmann, of Berlin, has given a satisfactory account of all that is at present known on this subject. The echinococcus cyst is the only animal parasite found in the female breast; the reports which, from time to time, come of the presence of lubrici and other worms in this organ, the author states to be founded on error.

From an analysis of twelve well authenticated cases of echinococci in the mammæ, it was found that in seven cases the right breast was affected, and in five the left. All parts of the gland may be involved except the nipple and its immediate neighborhood. The cysts probably enter the breast from the portal system, through its anastomosis with superficial abdominal veins, by the small veins, which anastomose with the portal system. They lie in a rounded cavity formed by the displacement of the lobules of the gland and of the connective tissue between them, with a wall of about one centimetre in thickness. Irritation, by friction or otherwise, may cause the formation of a sero-purulent, or a purulent fluid, between the cavity containing the cyst and the cyst itself.

In general character the echinococcus resembles that found in other parts of the body. The cyst may be single, or it may consist of a mother cyst, and several daughter cysts. The smallest of the mother cysts was as large as an apple; the largest reached the size of a man's fist.

The early symptoms of an echinococcus of the breast are trifling, and the cysts may reach the size of a hen's egg before it causes inconvenience to the patient. Then a feeling of weight and tension in the breast, difficulty of moving the arm, and tenderness on pressure, may be complained of. Fluctuation is usually present. The growth of the cyst is very slow; it may remain unaltered in size for years, and then suddenly enlarge, sometimes without assignable cause, sometimes following lactation or mechanical injury. Inflammation may be set up by exploratory incisions or other sources of irritation, and an abscess may form which afterwards discharges a scanty pus, and eventually the cyst may be thrown off, either entire, or bit by bit.

As a rule, the general health is unimpaired from the presence of the parasite, with the exception of the slight constitutional disturbance arising during the suppurative process.

The differential diagnosis from other tumors of the breast is usually quite easy. Simple cysts are the most difficult to distinguish from echinococci. The prognosis is usually favorable. The treatment is the removal of the cyst by means of a large incision.—*Boston Medical and Surgical Journal.*

ANOMALIES OF DIGESTION.—A proper subject for inquiry is presented by Dr. Blake in his brief paper on anomalies in digestion. The modern idea of the process makes it altogether chemical. Given a certain amount of gastric juice and food, with heat and vermicular movement, the work is done. But it is evident that other elements enter into the problem. Abernethy used to say to his students: "Some physiologists will have it that the stomach is a mill; others that it is a fermenting vat; others that it a stew-pan. But, gentlemen, it is neither a mill, nor a fermenting vat, nor a stew-pan, but a *stomach*, gentlemen, a STOMACH."

Microscopy.

DIAGNOSIS OF BLOOD STAINS.—DR. WOODWARD vs. DR. RICHARDSON.

To the Editor of Cincinnati Medical News.

Sir,—I notice in the News of last month your reprint of Dr. Woodward's article attacking the position previously assumed by Dr. J. G. Richardson.

As many of your readers may not have Dr. Richardson's paper (read before the Biological and Microscopical Section of the American Academy of Natural Sciences), it may be proper to say in brief that Dr. Richardson simply claimed that, under an amplification of 3700 diameters (or more), as furnished by modern instruments, he was enabled to detect the red blood-corpuscle of man from those of ox, sheep, deer, cat, goat and horse.

Dr. Richardson goes thus far, and no farther—he wisely abstained from the discussion of blood-corpuscles of other animals which approximate to those of man, thus withholding information that perchance might prove of service to the rogue.

Dr. Richardson, in support of his position, prints in detail six experiments, proving that in *each instance he did detect* the corpuscles of man from those of the ox and sheep. Dr. R. says: "In conclusion, I submit that the results of my experiments above narrated *prove that*, since the red blood-globules of the pig (1-4230), the ox (1-4267), the red deer (1-4324), the cat (1-4404), the horse (1-4600), the sheep (1-5300), and the goat (1-6366) are all so much smaller than even the ordinary minimum size of the human red disk, as measured in my investigations, we are now able, by the aid of high powers of the microscope, and under favorable circumstances, to positively distinguish stains produced by human blood from those caused by the blood of any of the animals just enumerated, and this even after the lapse of five years from the date of their primary production."

It is remarkable that Dr. Woodward should "entirely dissent from this view of the matter, that human blood-corpuscles can be distinguished by microscopic measurement from those of the lower animals," named by Dr. Richardson, *without offering some positive evidence in support* of his assertion. On the contrary, Dr. Woodward does not disprove a single word of Dr. Richardson's paper. Dr. Woodward does indeed discuss some of the difficulties which environ the diagnosis of the blood of the dog, presenting well known facts, but in no wise overthrows Dr. Richardson's positions.

Even in the case of the dog the writer of this cannot agree with Dr. Woodward, that it is certain the blood of the dog *cannot*, "*under favorable circumstances*," be distinguished from that of man.

It is noticeable that Dr. Woodward, with his usual candor, frankly admits that he has not yet "himself made systematic measurements of the blood of other animals than the dog." This has significance, and suggests that Dr. Woodward may yet find occasion to make further observations which, when published, will prove a valuable contribution to the medical jurisprudence of the day. At present, however, the detailed and successful experiments published by Dr. Richardson remain intact, and are not materially changed by the advent of Dr. Woodward's dissenting paper.

As to the other animals, enumerated by Dr. Woodward as presenting difficulties to the microscopist, to wit, rabbit, guinea-pig, monkey, seal, otter, kangaroo, capybara, wombat and the porpoise, it may be said (so far as

most of these are concerned) that *American* microscopists will seldom if ever (in the nature of things) be called upon in the capacity of "experts" to detemine in regard to them, and any farther discussion of the blood disks of these animals may safely be dismissed.

My friend, Dr. Wm. M. Eames, of this place, having read both the articles referred to, and being desirous of submitting the matter to further tests, handed me a few days since specimens of blood-stains, requesting me to detect if possible, by the aid of the microscope, those due to human blood. These specimers were marked by him *a*, *c*, *d*, *e*, *f*, *g*, *h*, *i*, and *l*.

According to Dr. Eames' request, these stains were submitted to examination under the microscope. The objective used was a superb Tolles' 4-system wet 1-6, and 1-4th inch solid eye-piece, in connection with Tolles' amplifier, which nearly doubles the power; the amplification nearly 4000 diameters. The images of the various blood-disks were "thrown down" on paper by aid of camera lucida, and the transverse diameters of the blood-corpuscles sketched thereon. The distance of the camera from the paper was rigidly maintained by the use of a strut, properly fitted to the eye-piece, and extending to the table. The illumination was furnished by an ordinary German students' lamp. The objective was used throughout with systems closed, and optical contact made with *glycerine* in place of water. After ten hours of close *severe* work, my observations were completed, at once written out, and forwarded to Dr. Eames.

Very shortly afterwards I went to the notary public and *swore* that the specimens "*f* and *i*," sent me by Dr. Eames *were* human blood, and also, that the other specimens *were not* human blood. During the evening of the same day I received from Dr. Eames the following note:

FRIEND SMITH:—Your report of examinations of specimens of blood-stains I sent you is received. Much to my surprise you have made no mistake in regard to *any* of the the nine specimens submitted. The two marked *f* and *i* are, as you pronounce them, human blood. Also those marked *a*, *c*, *d*, *e*, *g*, *h* and *l are*, as you positively declare, *not* human blood. The specimens marked *d*, *g*, *h* and *l*, were also *correctly* designated by you.

I regret that you were unable to find time to complete the investigations, so as to designate the remaining specimens, but am gratified to know that the object sought has been fairly accomplished, viz: that human blood can be distinguished, by the use of high magnifying powers, from that of the domestic animals with which it is liable to be confounded.

I am also satisfied that only those who possess great skill in the use of the microscope can determine these questions with *certainty*.

Very respectfully yours, WM. M. EAMES.

It may be proper to say, that the blood-stains furnished by Dr. Eames included those of man, ox, sheep and horse.

I beg to add that my efforts in this matter of diagnosis of blood-stains were suggested only by my thorough conviction of the validity of the positions claimed by Dr. Richardson. It will be noticed that I used higher amplification than did Dr. Richardson, although my objective was only a low 1-6th, and this objective, with 1-8th inch solid eye piece, would have given good images amplified nearly 8000 diameters, and will bear to be so used when necessary.

Finally, in general, the microscopist will occupy *safer ground* when he states simply his own observations, such as they may be, rather than when he prejudges the capacity of other observers.

J. EDWARDS SMITH.

Ashtabula, O., March. 12, 1875.

NEW SPECIES OF RHIZOPODS.

In "Silliman's American Journal," for January, 1875, there is an account of a recent paper by Professor Leidy on the above subject, which was read before the Philadelphia Academy of Natural Science. Professor Leidy says that among the amœboid forms noticed by him in the vicinity of Philadelphia, there was one especially remarkable for the comparatively enormous quantity of quartozse sand which it swallowed with its food. The animal might be viewed as a bag of sand! It is a sluggish creature, and when at rest appears as an opaque white spherical ball, ranging from one eighth to three eighths of a line in diameter. The animal moves slowly, first assuming an oval and then a clavate form. In the oval form one measured three fifths of a line long by two fifths of a line broad, and when it became clavate it was two thirds of a line long by one eighth of a line broad at the advanced thick end. Another, in the clavate form, measured seven eighths or a line long by one third of a line wide at the thick end. The creature rolls or extends in advance, while it contracts behind. Unless under pressure it puts forth no pseudopods, and the granular entosarc usually follows closely on the limits of the extending ectosarc. Generally the animal drags after it a quantity of adherent dirt attached to a papillated or villous discoid projection of the body.

The contents of the animal, besides the granular matter and many globules of the entosarc, consist of diatoms, desmids, and confervæ, together with a larger proportion of angular particles of transparent and mostly colorless quartz. Treated with strong mineral acids so as to destroy all the soft parts, the animal leaves behind more than half its bulk of quartzose sand.

The species may be named *Amœba sabulosa*, and is probably a member of the genus *Pelomyxa*, of Dr. Greef.*

The animal was first found on the muddy bottom of a pond, on Dr. George Smith's place in Upper Darby, Delaware County, but has been found also in ponds in New Jersey.

When the animal was first noticed with its multitude of sand particles, it suggested the probability that it might pertain to a stage of life of *Difflugia*, and that by the fixation of the quartz particles in the exterior, the case of the latter would be formed. This is conjectural, and not confirmed by any observation.

A minute amœboid animal found in *Spirogyra* in a ditch at Cooper's Point, opposite Philadelphia, is of interesting character. The body is hemispherical, yellowish, and consists of a granular entosarc with a number of scattered and well defined globules, besides a large contractile vesicle. From the body there extends a broad zone, which is colorless, and so exceedingly delicate that it requires a power of 600 diameters to see it favorably. By this zone the animal glides over the surface. As delicate as it is, it evidently possesses a regular structure, though it was not resolved under the best powers of the microscope. The structure probably consists of globular granules of uniform size, alternating with one another, so that the disk at times appears crossed by delicate lines, and at others as if finely and regularly punctated. The body of the animal measured from $\frac{1}{66}$ to $\frac{1}{50}$ of a line in diameter, and the zone is from $\frac{1}{333}$ to $\frac{1}{200}$ of a line wide. The species may be named *Amœba zonalis*..

The interesting researches of Professor Richard Greef, of Marburg, published in the second volume of Schultze's Archiv f. Mikrokopische

*Archiv f. Mik. Anat., x., 1873, 51.

Anatomie, on Amœbæ living in the earth (*Ueber einige in der Erde lebende Amœben*, &c.) led me to look in similar positions for Rhizopods.

In the earth, about the roots of mosses growing in the crevices of the bricks of our city pavements, in damp places, besides finding several species of *Amœba*, together with abundance of the cammon wheel-animalcule, *Rotifer vulgaris*, I had the good fortune to discover a species of *Gromia*. I say good fortune, for it is with the utmost pleasure I have watched this curious creature for hours together. The genus was discovered and well described by Dujardin, from two species, one of which, *G. oviformis*, was found in the seas of France; the other, the *G. fluviatilis*, in the river Seine.

Imagine an animal, like one of our autumnal spiders, stationed at the center of its well spread net; imagine every thread of this net to be a living extension of the animal, elongating, branching, and becoming confluent, so as to form a most intricate net; and imagine every thread to exhibit actively moving currents of a viscid liquid both outwerd and inward, carrying along particles of food and dirt, and you have some idea of the general character of a *Gromia*.

The *Gromia* of our pavements is a spherical, cream-colored body, about the one sixteenth of a line in diameter. When detached from its position and placed in water, in a few minutes it projects in all directions a most wonderful and intricate net. Along the threads of this net float minute Naviculæ from the neighborhood, like boats in the currents of a stream, until reaching the central mass they are there swallowed. Particles of dirt are also collected from all directions, and are accumulated around the animal, and when the accumulation is sufficient to protect it, the web is withdrawn, and nothing apparently will again induce the animal to produce it.

From these observations we may suppose that the *Gromia terricola*, as I propose to name the species, during dry weather remains quiescent and concealed among accumulated dirt in the crevices of our pavements, but that in rains or wet weather the little creature puts forth its living net, which becomes so many avenues along which food is conveyed to the body. As the neighborhood becomes dry, the net is withdrawn to await another rain. The animal with its extended net can cover an area of nearly half a line in diameter. The threads of the net are less than the 1-3000th of an inch in diameter.—*Monthly Mic. Jour.*

RESEARCHES IN THE LIFE HISTORY OF MONADS.

We wish particularly to call the attention of those of our readers who are interested in these minute forms, to a paper bearing the above title, and read before the Royal Microscopical Society.* The authors, Messrs. Dallinger and Drysdale, after a reference to their previous papers on this subject, proceed to describe how the forms investigated were obtained; viz., by the maceration of the heads of codfish and salmon for several months. A circumstance of considerable interest occurred in connection with these experiments. The authors say, "we always work from a small quantity of the large vessel of decaying matter which we keep at hand. During the early summer the intense and continued heat evaporated all the fluid from the salmon's head infusion without our knowledge. The foim we were working had been in great profusion. It was growing less abundant in our small washing-tanks, and we feared we must wait another year to finish our inquiry. But we led a forlorn hope, and took the hard, porous, dried papier-mache-

* Published in No. 72 of the *Monthly Microscopical Journal.*

like mass which formed the dried residuum of the infusion, and determined to put it in an exhausted maceration of the same kind, which at that time showed only very feeble signs of *any* life, and certainly no monads. We watched the result, and to our great surprise in three days the required monad appeared in remarkable vigor, and daily increasing abundance, enabling us to complete our researches into its cycle of development." In addition to this, another and remarkable form made its appearance, whose history the authors were enabled to complete, and which had very feebly shown itself previous to the drying up of the infusion, but now showed great vigor, and eventually survived and predominated, evidently very much at the expense of other forms. This new form possessed more distinctive and distinguishable structure than any other so low is the scale of life with which the authors were acquainted. This form they thus describe:—"The sarcode is invested with a distinct hyaline envelope perfectly structureless to our best appliances, and sharply distinguished from the protoplasm of the body; two flagella, inserted into what appears like a special organ of locomotion; a large central disc or nucleus-like body; numerous protoplasmic granules; a pair of "snapping" eye spots, and occasionally some remarkable club-like appendages to the anterior of the body, the nature of which we have failed to ascertain." The shape of these remarkable organisms appears to be oval, and the size (exclusive of the flagella) when magnified 1,300 diameters, is 1½ inch the long diameter, and one inch the short diameter; the flagella are about twice the length of the body. By continuous observation on the normal form, with a power of 1,200 to 10,000 diameters, they were able to trace the cycle of change. In about forty minutes a line across the short diameter appeared, and soon after a marked constriction within the hyaline membrane might be detected, the motion of the monad the whole while remaining unaffected. In about two hours from the first a total division takes place, the hyaline membrane still remaining intact. After swimming freely for not less than 10 minutes, an indentation may be observed in the long axes of the divided bodies; and in from seven to twenty minutes a constriction longwise ensues. After this the divided bodies remain within the hyaline envelope, sometimes dividing into eight and even into sixteen, and swimming about with an elegance and ease not surpassed by *Volvox globator*. After swimming in this way for from ten to one hundred minutes, one of the forms escapes, and becomes a perfect monad like its parent. This method of increase goes on with great rapidity, and for many generations. For a detailed description of other modes of increase, we must refer our readers to the lucid and minute descriptions of the authors; and we think that the unprejudiced reader will come to the conclusion that these experiments are fatal to the theory of spontaneous generation. We find that germs are so minute that the highest powers of the microscope are unable to detect anything but a filmy cloud, and that only after some hours' patient observation can the first rudiments of an organism be detected. The authors have also proved that ordinary desiccation, or even heating up to 250° Fahrenheit, does not destroy their vitality. —*Science Gossip*.

SAN FRANCISCO MICROSCOPICAL SOCIETY.

ANNUAL MEETING.—REPORTS AND ELECTION OF OFFICERS.—DONATIONS TO THE CABINET.

On Thursday evening last was held the annual meeting of the San Francisco Microscopical Society, which was well attended by resident members, and the reports of its various officers show a thriving and energetic state of affairs.

Mr. Hanks, who has been President of the society since its organization, read a very full and complete paper, giving a brief history of the Society, showing what had been done by the members during the past year, and which contained many valuable suggestions, extracts from which we give a place below.

The report of the Treasurer, Mr. Ewing, was very satisfactory indeed, and the assets of the organization, in the way of instruments, library, furniture, objects, etc., with the cash on hand, shows what a few determined ones can do when they are in earnest.

After the reading of reports, the election of officers for the ensuing year took place, resulting as follows:

President, Wm. Ashburner; Vice-President, H. C. Hyde; Recording Secretary, C. Mason Kinnie; Corresponding Secretary, Charles W. Banks; Treasurer, Charles G. Ewing.

Louis Rene Tulasne, of Paris, was elected a corresponding member of the Society.

Mr. J. P. Moore donated a pamphlet entitled "New Mexico," which was valued as containing a list of hot springs in that country, and from which he hoped to present, from time to time, samples of animal and vegetable life. The Secretary announced additions to the library in the way of six volumes of the "Monthly Microscopical Journal and Transactions of the Royal Microscopical Society."

Dr. Harkness donated a sample of the Palmella cruenta (gory dew), stating where it could be found in this city at the present time.

Mr. J. P. Moore donated a bottle of caoutchouc, stating he had found it useful for making cells and fixing covers; a sample of wild cotton, from Barbacoas; a sample of Liber used by the natives of the above locality for blankets, and two slides mounted by him with fibre of the same.

Mr. Scupham presented samples of rock composed of tertiary shells, from near Folsom, California; rock composed of fresh-water shells and protozoans, Cache valley, Utah; silicified oakwood, Roseville Junction; Arenaceous slate, showing crystals of per oxide of maganese, Green river, Wyoming; and specimens of the Tillansia usneoides with seed pods, from Galveston, Texas.

President Hanks' Report.

San Francisco, Feb. 4th, 1875.

To-night ends the third year since the organization of the San Francisco Microscopical Society. It is with pleasure that I announce to you that it has been a year of great prosperity. None of the members have died, none have been seriously sick, an increased interest has been manifested in microscopical science, not only by the growth of our Society and by the deep interest of our fortnightly meetings, but generally throughout the state. A desire has been shown to assist the earnest workers of this Society by sending objects for examination, and by calling attention to many strange and beautiful things that would otherwise have been lost.

Not only has the Society increased its apparatus, but many members have furnished themselves with first-class instruments, with which they pursue the fascinating science at their homes, bringing the result of their labors to the meetings, there to exchange ideas and to comment upon the result of their investigations.

It has been stated by persons of great experience that few cities in the Union were so well provided with good instruments as San Francisco. This is owing directly or indirectly to the influence of our Society.

Although I have said that we have greatly advanced in the study of micro-

scopy, yet, in effect, we have only just begun. If we have much, very much to learn yet, we may feel that we have laid a good foundation upon which to erect the superstructure. We are particularly fortunate in one respect: we are in a new and undeveloped country. Unlike Europe, every inch of which (figuratively speaking) has been placed in the field of the microscope, we have vast unexplored regions within our grasp, and the seientific world is looking to us for results.

It has been the custom of our Society to give entertainments to our friends from time to time. During the year three of these have been given. One large reception was held on May 4th, at Mercantile Library Hall, and was well attended. Two of less magnitude were given at our rooms. These meetings not only give pleasure to our guests, but foster a taste for microscopical study, by giving our friends an opportunity to see what they could only otherwise guess at or remain in ignorance of. There are many people in San Francisco who have no idea of the power of the modern microscope; to them our meetings must be instructive as well as entertaining.

Our future receptions must be more instructive than those past, from the fact that our members are more generally provided with good instruments and objects, and have learned to display them in a manner more satisfactory. I believe we can in no way do so much for the cause of science, as by the continuance of these exhibitions.

Finding our rooms too small for our growing Society, the question arose whether we should remove to another location, or enlarge the rooms we already occupy. The latter course was decided upon, and the result has been our present cosy quarters.

In closing this report, I wish to call the attention of the Society to the importance of publishing our proceedings. By doing so we can by exchange obtain those of other societies, and thus learn what is being done elsewhere. If our first publication should not be all we could desire, we have another year before us, in which we may hope to improve.

The regular meeting of the San Francisco Microscopical Society was held on Thursday evening last, with a good attendance of members. President Ashburner in the chair; Messrs. A. W. Jackson, of the University of California, H. Scamman, of Downieville, H. Mollineux, Theodore H. Hittell, Charles Troyer and Dr. J. M. Willey of this city, present as members.

Dr. Gustav Eisen, Prof. of Zoology, University of Upsale, Sweden, was elected a corresponding member.

The Secretary announced the receipt of six additional volumes of the *Monthly Microscopical Journal*, completing the series, and the February number of the *American Naturalist*.

Mr. H. G. Hanks donated a copy of the *Cincinnati Medical News* containing notices of meetings of microscopical societies.

A SIMPLE METHOD OF DEMONSTRATING ANGULAR APERTURE.

In the President's address read before the Royal Microscopical Society, Feb. 3, 1875 (see London Monthly Microscopical Journal, for March), Mr. Brooke held that "Mr. Wenham is unquestionably right in stating that if an isosceles triangle be described, the base of which is ten times the measured diameter of the face of the front lens, and the altitude ten times the measured distance of the focal point from the same surface, the vertical angle of that triangle will correctly represent the *maximum available* angle of aperture."

Here we have at last, thanks to Mr. Wenham, not only the advent of a brand new optical law, but more, an infallible rule for the determinination of the angular aperture of objectives. There will be no further need of "glimpsing" the striæ of Moller platte,* nor need we use the "death blow" slit devised by Mr. Wenham to bring Mr. Tolles to grief.

After "rubbing my eyes," and having recovered from my surprise, I proceeded to tests in the manner following, to wit: I selected an objective of about ¼ inch power, [This is a "Stanhope" lens, doubtless.—Ed.] which has been in my possession but a short time, and I knew nothing of its angle nor as to its maker, although I strongly suspect Mr. Tolles had something to do with its construction. The clear diameter of the front of this objective measured 3-10ths of an English inch.

Now, applying Mr. Wenham's test, as quoted by Mr. Brooke, using the objective dry, I found that I got the most perfect definition when the object contacted the front surface of the objective. Multiplying the diameter of front lens of objective by ten, as directed, we have=3 English inches. Similarly multiplying the focal distance (?) by ten, I got=.000; exactly as Mr. Wenham once stated as the proper focal distance appertaining to 180° of aperture.†

Why employ the constant factor of 10? With it or without, Mr. Wenham's infallible rule *demonstrates* 180° aperture for the objective used. I obeyed instructions, however, that no "after quibble" should arise.

Some One.

To the Editor Cincinnati Medical News:

Sir—My attention has been called to an article in the March number of the London Monthly Microscopical Journal, commencing as follows: "*Angular aperture of no importance!* An American gentlemen, who certainly speaks, if with no other favorable quality, at least with firmness and decisiveness, has read a paper on the above question, before a recent meeting (Jan. 5, 1875) of the Memphis Microscopical Society. The following extracts from his communication will be read with some little surprise."

This absurd blunder is supplemented with a reprint of the concluding portion of my first paper "*On Low* vs. *Wide Angled Objectives*," prepared for the Medical News, and read before the Memphis Microscopical Society.

If English gentlemen do not read this choice jumble and mangle with some little surprise, the fault will not lay with the editor of the London Journal.

Is it possible that American microscopists or American opticians can do or make anything that will please our valued cousins across the water? If so, will it pay? We tried them with 180° of aperture, and failed.

Very respectfully, your obedient servant,

J. Edwards Smith.

Ashtabula, O., March, 1875.

MOUNTING SELECTED DIATOMS.

I have at various times received from my friend Herr Weissflog, slides of selected diatoms (not arranged in patterns, the doing of which is a shameful waste of time), mounted in a manner which leaves nothing to be desired. The forms are mounted on a thin cover, three fifths of an inch in

* London Monthly Mic. Jour, March, 1874, pp. 113.
† Ibidem.

diameter; a thin silver disc of similar size, with a eentral perforation, sometimes as small as the one-fiftieth of an inch in diameter, is then mounted on the slide, and the glass cover placed upon it and pressed down, the central aperture of the disc forming a tiny cell for the diatoms. Two advantages arise from this method of mounting; viz., the ease with which an object is found, and the cutting off a considerable amount of extraneous light. A further recommendation is the very neat appearance of the slides.—*F. K.*

OBJECT GLASSES.

It seems that since the superiority of R. B. Tolles', of Boston, new four system lenses have been demonstrated, the distinguished English makers of objectives are abandoning their old formulas and instituting new ones. At a late meeting of the Royal Microscopical Society, Messrs. Powell & Lealand exhibited two glasses on a new formula; one 1-4th, showing the lines of *amphipleura pellucida*, and the other, 1-8th, showing *pleurosigma angulalum*, +4000. This object was illuminated by direct light. The effect was to show the inter-spaces remarkably magnified, and the beads comparatively small; they stood out like minute spheres of pink coral on a white ground.

The Messrs. Ross, also, have determined to abandon their old construction from the ½ inch upwards, and adopt one devised by Mr. Wenham. In the new combination, it is stated, a great increase of brilliancy and definition is obtained by dispensing with six surfaces formerly used. The higher powers, from 1-5th upwards, can be also used as immersion lenses by meerely adjusting the collar to the mark "wet," thus avoiding the cost of extra fronts, and loss of time in changing them.—Ed.

COLORED RINGS OF CRYSTALS AS SEEN THROUGH THE MICROSCOPE.

Dr. W. H. Stone has communicated to the Physical Society an account of an arrangement for exhibiting the colored rings of uniaxial and biaxial crystals in a common microscope.

The author was not aware that any arrangement had been hitherto supplied to the ordinary microscope other than an extra top to the eyepiece, containing a supplementary stage and an analyser. This could only be considered a clumsy expedient.

The objects to be attained were clearly two—first, to transmit the rays at considerable obliquity through the plate of crystals; secondly, to gather these up, and form a real image within the tube of the microscope. Amici had accomplished this by a special combination of lenses which bears his name; it might, however, be done simply by placing a screwed diaphragm on the end of the upper draw-tube within the body of the microscope. The screw should be that ordinarily used for object glasses. To this an object glass of long focus was fitted, and another of higher magnifying power in the usual place. The whole body was then drawn out and adjusted to a telescopic focus on a distant object. The lower objective formed the object glass of the telescope, and the inner objective with the huyghenian eyepiece a compound ocular.

On reinserting the body thus arranged, and illuminating the crystal on the stage with convergent light by means of a condenser, the rings and

brushes could be perfectly seen. The whole double series of rings on a biaxial crystal of carbonate of lead was thus shown.

The condenser used was a "kettle-drum" of two plano-convex lenses. The objective on the nozzle of the microscope was a two-thirds of Ross; that within the draw-tube a three inch objective of the same maker.—*Philosophical Magazine.*

EXTRACTS FROM PROCEEDINGS OF MICROSCOPICAL SOCIETIES.

Medical Microscopical Society, October 16, 1874.

New and epeditious method of Micrometry. By John Gorham, Esq.—The principle of the instrument described depended upon the measurement of lines drawn parallel to the base of an isosceles triangle—the base of the latter being given—by means of the sides, which are divided into a known number of parts. The triangle is obtained by dividing through the centre a disk of brass, about 1¼ inch in diameter and half an inch thick, and bevelled at the edge so as to allow of its being embraced by a stout india rubber ring, by which means the two portions are held in perfect apposition at the edges of the section. The line of section for the distance of one inch from the circumference is marked out into fractions of an inch, at least into thirty-two parts, a less number being insufficient to obtain a minute result. A piece of paper of known thickness is now inserted between the halves of the disc and moved along till its edge touches the commencement of the marked inch, the elastic band retaining it in its place, and thus an isosceles triangle or gap is left with a base the thickness of the slip of paper, and with an edge of one inch divided, as stated, into thirty-two equal parts. If a hair or cobweb be passed along the slit from base to apex it will be arrested somewhere, and by reading off the number opposite which it stops—a simple matter of multiplication, the base of the triangle being known—will give the diameter required. For microscopic purposes the instrument is placed on the stage, and the object to be measured, placed on a thin glass cover, is slid over the aperture till it exactly at one point spans it; the diameter is then read off. To obtain still greater accuracy Mr. Browning has added a screw of known value to separate the halves of the micrometer in lieu of the slip of paper.

In answer to some questions by members of the Society, the President replied that the instrument was specially designed for unmounted objects, the thickness of an ordinary glass slide being rather an objection in the case or mounted ones; a thin glass cover might be in all cases employed for placing the specimen, *e.g.* blood or pus, upon.

Royal Microscopical Society.

Suctorial Organs of the Blowfly.—Dr. Anthony drew attention to the presence of certain "chitinous rings" or "arches" contained in a zigzag slit or furrow which passes down each of the pseudo-tracheæ, or quasi tubes of the tongue. These rings keep the slit or furrow open, and were supposed to be concerned in suction.

Silica Films artificially produced.—In a former communication Mr. H. J. Slack had described a variety of beaded patterns that could be obtained by making the artificial diatoms of Max Schultze. Silicic fluoride gas is allowed to come in contact in its nascent state with cotton filaments moistened with water; the result is a deposition of silica in the shape of irregular vesicles, the walls of which exhibit beaded structures in definite patterns. If the gas

is passed simply into water, the silica is deposited in amorphous particles, but by using a mixture of glycerine and water very delicate films are obtained which show a very complicated beaded structure: some have a striking though illusory resemblance to organic cell-forms, and even to bacteria and fungi. The size of the spherules is from 1-30,000th to 1-100,000th of an inch.

On the use of Black Shadow Markings and a Black Shadow Illuminator.—The intensity and clearness of black shadows as seen with the microscope was recommended by Dr. Royston Pigott as a test of the excellence of the instrument. Some observations made on the spherules of silica obtained by Mr. Slack's process were described, and reference was made to the black shadow illuminator constructed by the author in 1864.

Dublin Microscopical Club.

Navicula gemmata, var. *biseriata*, Grunow=*Navicula spiralis*, O'Meara, *exhibited.*—Rev. E. O'Meara exhibited some specimens of *Navicula gemmata*, var. *biseriata*, Grunow, mounted by our corresponding member, F. Kitton, Esq., of Norwich. Mr. O'Meara considered the form identical with *Navicula Spiralis* exhibited by him at the meeting of the Club in August, 1871, and so named by him. At this time he had not seen Grunow's work, 'Reise der Novara,' published 1868, and in which this form is described; if, indeed, the figures left any doubt on his mind as to its identity, the inspection of the example kindly supplied by Mr. Kitton had completely removed it.

Section of Spine of Diadema setosum.—Mr. Mackintosh showed a section of the spine of *Diadema setosum.* These spines are long, hollow, and strongly serrated; in section the central cavity is seen to be surrounded by a thin, dark colored ring, from which a series of slight solid pieces are given off, which, at first narrowing, afterwards expand into long isosceles triangle-shaped segments, pale yellow in color, and about equal in length to the diameter of the central space. The bases of these triangles are rounded, and form the longitudinal ribs, which project from the surface of the spines, and irregular bands of solid material pass from one ray to the other, sometimes exhibiting foramina.

Human Hair presenting a remarkable alternate transverse dark and white Mottling.—Dr. Frazer exhibited a quantity of female hair of considerable length (upwards of thirteen inches), which was lately sent to a hairdresser in this city for manufacturing purposes, and found useless; it was reported to be "Italian hair." Every separate hair was finely marked with alternate white and dark brown coloring, so that, although the entire mass, at a short distance, was of a dark brown or brownish black color, a closer inspection showed that it presented the remarkable transverse mottling described. The white interspaces were very small, but occurred with strange uniformity along the entire length of the hair from end to end. As the mass had been cut off, it presented no roots, but the linear markings extended up to the point of removal. On measuring some of the colored parts it was ascertained that a space of $\frac{1}{8}''$ covered five separate tints of hair—three white and two dark colored. The tints shaded into each other if examined closely, but the change of hue, examined at a slight distance, appeared abrupt and complete. The hair was moderately coarse, but otherwise of good quality; all its physical and microscopic characters were those of ordinary human hair. Of course, no history could be procured of the specimen, which, so far as Dr. Frazer's information extended, was unique, approximating closely to the hair of some animals in coloration.

Intestinal Glands of Mouse.—Mr. B. Wills Richardson exhibited a doubly

stained piece of the intestine of a mouse, and observed that in recently making some nitrate of silver and carmine stainings of both the (so-called) endothelium and epithelium to be found in the abdominal cavity of that animal, some of which stainings he had brought before the Club at its last meeting, he found that its intestine, when successfully stained and laid open longitudinally and carefully pencilled out with a sable brush, afforded some very instructive specimens illustrative of its glandular supply. In the specimen now shown the walls of the alveoli for the little intestinal glands, which walls were chiefly formed of connective tissue, were stained slightly brown by nitrate of silver, the glands themselves being well colored by the carmine fluid. Here and there in the specimen a gland had been pencilled out of its alveolus, which, of course, was empty. Since he had mounted the specimen under exhibition he had succeeded in separating the muscular wall from the mucous membrane of the remainder of the stained piece of the intestine. This wall is composed of two distinct membranous layers of organic muscle, the fibres of one layer running in a circular, and of the other in a longitudinal, direction. It might be of some use if he mentioned that nitrate of silver staining is liable to be obliterated by the ammonia of the ordinary carmine stain, and, therefore, it would be advisable, in staining tissues with nitrate of silver and carmine stains, to substitute potash for the ammonia of the carmine fluid. He had tried the potash, and found that it answered the purpose admirably. The potash, he reminded the Club, had a tendency to soften many structures, and, therefore, delicate objects should not be left too long in this potash carmine fluid. This softening property, however, had its advantages, for owing, probably, to it, he was enabled to peel the muscular off the mucous coat with the assistance of a sable paint brush.—*Quarterly Jour. of Microscopian Science.*

ANATOMY AND HISTOLOGY OF THE TESTICLE.

V. von Mihalkovics ('Bericht der Math.-phys. Classe der Kœniglichen Sachs. Gesellschaft der Wissensch.,' 1873), under the direction of Ludwig and Schwalbe, has investigated the course, structure, and contents of the seminal tubes, the interstitial tissue of the testicle, and the lymph vessels and the blood vessels of the testicle and epididymis. Besides those of the human subject, the testicles of the rabbit, guinea-pig, rat, mouse, dog, cat, hedgehog, boar, goat, bull, and several birds (pigeons, etc.), were examined. The paper is beautifully illustrated with several colored plates. The author has arrived at the following couclusions:

1. The convoluted tubules form a network by dividing dichotomously. The terminal branches arising from this division are connected together by loops. No bud-like dilatations of the wall of the seminal tubes are to be found in the cortical layer of the human testicle. The author thus disposes of the view that the convoluted seminal tubes arise by blind extremities, as supposed by Beale, Henle, Kœlliker, and Sappey.

2. The tubuli recti are not simple prolongations of the contorted tubules, but excretory tubes, which lie in the tissue of the organ of Highmore and in the lower end of the septa.

3. Supporting cells (Stuetzzllen) and germinal nets (Keimnetz) are artificial products. They owe their origin to the coagulation of a tough substance, rich in albumen, which lies between the seminal cells. On the addition of hardening reagents, coagulation occurs, and a network appears between the seminal cells.

4. The interstitial cells are constituents of the testicle, whose analogues

are also to be found in other organs (coccygeal and carotid glands and corpus luteum).

5. The connective tissue of the testicle consists of finer and stronger bundles of connective tissue, which form networks and are enveloped by endothelial cells. The mesh-spaces are in many places bridged over by their endothelial membrane, which then passes over to and becomes continuous with the outermost layer of the seminal tubes, and also envelopes the blood vessels.

6. The lymph passages arise partly in the mesh-spaces of the connective tissue enveloped in endothelium, and partly in the spaces of the individual lamellæ of the walls of the seminal tubules. Proper lymph vessels enclosed within tube-like walls do not occur in the parenchyma of the testicle.

7. A capillary network of blood vessels, lying in intimate connection with the membrana propria, is closely woven round the seminal tubules.

8. The epididymis is not only an excretory tube, but also the place for the secretion of the fluid constituents of the seminal fluid (Dr. Stirling, in 'London Medical Record,' 1874, p. 321).

DIATOMACEÆ OF THE CARBONIFEROUS ERA.

Count F. Castracane, a well-known microscopist, and investigator of those minute but exceedingly interesting organisms, has (says *Der Naturforscher*) announced to the Accademia Pontificia at Rome, that he has been fortunate enough to prove the existence of diatomaceæ during the coal period. His first object of investigation was a piece of Lancashire coal, which was pulverized and then exposed to a white heat. The decarbonized dust is then treated with nitric acid aud chlorate of potash in test tubes, and washed clean with distilled water, and then placed under the microscope. The diatomaceæ found in this coal belong, with the exception of a *Grammatophora*, of a small *Coscinodiscus*, and of an *Amphipleura*, entirely to fresh water genera and species, such as the following: *Fragillaria Harrisonii*, Sm., *Epithemia gibba*, Ehbg., *Nitzchia curvula*, Kz., *Cymbella scolica*, Sm., *Synedra vitrea*, Kz., *Diatoma vulgare*, Bong. The presence of the marine forms, which were present among the very numerous fresh water diatoms, only in one single specimen, appears to prove that, at one time, even sea water found its way among the vegetation from which the coal under investigation originated. Besides this Lancashire coal, Count Castracane investigated coal of the Carboniferous era from other locations, as, *e. g.*, a piece of the so-called Cannel coal from Scotland, from Newcastle, and from the mines of St. Etienne. In every one of the pieces, the presence of diatomaceæ in greater or less numbers was proved. And in none of the specimens was there a single form found which did not belong to fresh water. The species varied in the three different specimens of coal, but, as in the case of the Lancashire coal, not even a single new form was discovered, but all closely agreed with the existing fresh water diatomaceæ, from which they could not be distinguished by the most practised eye. The shapes of the coverings, the details of the structure, form, and number of the markings,—in short, all the signs by which the species of diatomaceæ are generally distinguished, are, in the diatomaceæ of the coal period, identical with those of existing species; so that these organisms, in the indeterminably long period from the coal epoch to the present time, have undergone no perceptible modification.—*J. S. Hill, in Science Gossip.*

Micro-Photographs.—Prof. J. Edwards Smith, of Ashtabula, Ohio, is prepared to take micro-photographs in the best style of the art. Those who desire to indulge in microscopic pictures of themselves have only to send him a card-photograph and they will be gratified.

Pirating.—The *Monthly Microscopical Journal*, of London, and the *American Naturalist*, of Salem, Mass., are both disposed to filch from the microscopical department of the Medical News without giving credit. The first mentioned journal copied in full the article of Prof. J. Edwards Smith, without giving the slightest intimation from where it obtained it. Subsequently it has done the same as regards other matter prepared especially for us. The *American Naturalist*, in the March number, refers to papers prepared for the News without any credit.

Now those "who are familiar with the courtesies of literature and science," (we quote from the *Naturlist*) should exhibit the familiarity by giving credit when they make use of matter prepared for another journal.

Correspondence.

WINTER ON THE MEDITERANEAN.

Menton, France, Feb. 18, 1875.

Prof. J. A. Thacker, M. D.

Dear Sir.—In consequence of the mildness and dryness of the climate in winter on the coast of the Mediteranean sea from Marseilles to Genoa, this country becomes the great sanitarium for the invalid population of Europe as well as a great pleasure resort for all civilized nations.

Canns, Nice, Monaco, Menton, Bordighera, and San-Remo, all have their special claims and devotees. These towns are all situated in lovely valleys, with the blue Mediteranean for their southern, and the majestic Alps for their northern boundary, so that the cold north winds from the snow-capped mountains pass over the towns. Then, again, a tropical sun pours down its genial rays through an almost cloudless sky from October till March or April, during which time it seldom rains.

Canns, a quiet little town, a short distance from Nice, has several good hotels, and many suburban villas principally occupied by English aristocrats. The place has long been noted for the landing of Bonaparte here on his memorable return from Elba. It is acquiring quite a reputation as a winter health-resort, and now, that the world-renowned Madam Nilsson is staying there on account of her health, it will no doubt rapidly increase in favor.

Nice, the largest of the places mentioned, is quite a city; having a population of fifty thousand, which is increased to about sixty-five thousand during the season, several hundreds of whom are Americans. Nice, on account of its situation, with its numerous drives to the mountains, its world-renowned promenade, its theaters, its fine hotels, pensions, and elegant villas; its port and chateau, its fine floral gardens and palm trees, its Anglo-American newspaper, its American and English churches, its libraries, circles and clubs, its garden-concerts and gay society, it becomes the great central resort, not only for invalids, but for the pleasure-seekers of every clime and nation. It is the Put-in-Bay of Ohio, the Saratoga and Long Branch of New York, the Newport and Cape May of the Yankees, and the Brighton

of England. Most any day on the *Promenade des Angla* may be seen representatives of all nations, conspicuous among whom will be seen the vivacious Frenchman, the surly, stiff-jointed Johnny Bull, the fur-clad Russian and the go-ahead American.

The American fleet "puts in" to winter in the port of Villefranche, only a short distance from here. At the mention of the American fleet the Niceites are all in a glow of ecstasy from rememberances of the grand times past, and the anticipations of the glorious good times coming. Thence commences the season in good earnest, the balls, the parties, the *fetes*, at which "Uncle Sam's boys" figure very conspicuously. The Frenchmen may well be jealous here of the Americans, as the politeness and gentility of our "sailor boys" have caused them to be great favorites in society. Then the gay parties that are given in return, on board the "Congress and Franklin," will long be remembered by the lasses, and which reflect great credit on the brave boys who have imperiled their lives in hundreds of storms on old ocean's briny deep, and on many occasions undergone untold privations to maintain the honor and purity of the "stars and stripes," and the dignity of a country respected by all nations. We shall always look back with delight to the pleasant month of November that we spent in this beautiful city, during twenty-one days of sunshine, enjoying the fine sea bathing, pure warm and invigorating air, and the genial society, regarding it as one of the bright spots in our life's history.

But of Menton we wish more particularly to write, as it is of all the places mentioned the warmest and therefore the best place for invalids to spend the winter. Menton, an old Italian town, ceded to France in 1861, is situated in a crescent valley, with the Mediteranean sea to the south, and the mountains to the north. It extends from Cape Martin on the west, a distance of four miles on the coast, to the St. Louis bridge on the east, which is the boundary line between France and Italy, and the commencement of Grimaldi, a town situated on the mountain side four or five hundred feet above the sea.

The old Italian town of Menton is situated upon a high promontory or spur of mountain that projects into the sea, and divides the place into an eastern and western bay. The promenade du Midi, a splendid avenue, extends along the beach, the entire extent from Cape Martin to Grimaldi, and, fronting this avenue and facing the sea are situated the principal hotels, pensions and villas.

The level space extending back from the sea is only from one to two squares wide, thence commences a series of hills, gradually sloping upwards to a hight of five hundred to fifteen hundred feet, which are densely covered with lemon, orange and olive trees, with their living green and golden fruit, presenting a beautiful contrast with the bare greyish-white volcanic limestone mountains that surround them from the north, projecting three to fou thousand feet higher. It is this high range of mountains to the north, en circling the entire Menton amphitheatre to the east and west, that constitutes the great protective feature of the place. The mountains being so high and so close to the place, the cold winds from the north, north-west, and north-east pass over the town and strike the sea several miles from the shore. The town really being exposed to the south winds only, which are not severe and never cold. Then, besides this range of mountains forming the back ground of the Menton amphitheatre, there are the Maritime Alps, a still higher range, being from 5000 to 9000 feet high, which greatly increase the protection, and explains the immunity from the winter cold of this section of the country.

Owing to this protection from the cold northern winds, which the moun-

tains afford, the southern exposure, and the reflection of the sun's rays from the sides of the naked limestone mountains which form the amphitheatre, Menton is warmer in winter than Rome, Naples, and other places situated in the southern part of Italy, hundreds of miles from here.

The warmth of the winter climate of Menton is shown by the presence of large lemon and orange trees which ripen their fruits every year in the fullest perfection. Also by the numerous flowering shrubs, the rose, geranium, verbena, heliotrope, nasturtium, salva, and many other plants, perfuming the air by their flowers throughout the entire winter. The warmth is again shown by the constant growth and perfection in the open air, during the winter, of such vegetables as peas, beans, radishes, lettuce, etc., which we have served almost daily on our tables.

The great feature of the climate is its unchangeableness. The thermometer seldom descends as low as the freezing point, and then only in exposed situations, near the outlets of the torrents, which are more exposed to the down draughts from the mountains. The night minimum seldom descends below 40° during December, January, February and March; it also seldom ascends above 50°, and is generally between 40° and 50°. The day maximum in the shade varies from 50° to 58°, although occasionally below 50°. In the sun I have often seen the thermometer run up to 120° in mid-winter. It is so hot that it is necessary to carry an umbrella or sunshade to protect your eyes and head; but this hot sun is not depressing, for it is counteracted by the mountain and sea air.

In consequence to the proximity of the snow-capped mountains, the air must be cool and bracing, and would be cold, were it not warmed by an ardent sun, darting its rays through a cloudless sky, and a dry atmosphere, so dry that a fog is never seen any period of the winter, either on sea or land. It is this dryness of the atmosphere, the daily sun-shine, the uniformity of the temperature, and the bracing, invigorating and stimulating effects of the mountain and sea air, that makes Menton the great health resort that it is. It is in such a climate that persons suffering from pulmonary consumption can spend much of the day out doors without the danger of taking cold on the one hand, or becoming prostrated and exhausted on the other, as they might be in a too warm and moist climate.

Attention was first directed to Menton as a health-resort for consumptives by Dr. J. Henry Bennet, of London. To mention the name of Dr. Bennet is to mention the name of one of the greatest living pioneers of modern Gynæcology, and takes us back to the year 1845, when he profoundly stirred the medical world by his work on inflammation of the uterus, when he was only twenty-eight years of age. The developments that he made then, and gave to the profession through his writings at that date, are medical authority today, as will be seen by the numerous quotations of his opinions now to be found in all our recent works on diseases of women. Therefore I think it will interest you in what I wish to say about him, in connection with Menton, and also in reference to a department of medicine in which he has latterly distinguished himself.

In the prime of manhood, and in the midst of a busy and lucrative practice, Dr. Bennet was overtaken with that fell disease, pulmonary consumption, which caused him to abandon his practice, and to come in 1859 to Menton, a quiet, warm corner, as he and many of his friends thought, to die. But under a genial sky, freed from the labors and anxieties of life, he soon began to rally and improve. The man that had surmounted so many difficulties for the relief of others, was not the one to give up all hope and courage, or heroism when he was the sufferer. So he turned his attention entirely to his disease with the determination to master it and live, and thus,

in a new field, make other explorations for the good of humanity. Although he had extensive tubercular deposits, and two cavities in the right lung, with softening in various regions, several attacks of pulmonary hemorrhage, cough, and purulent expectoration, hectic fever, night sweats, partial loss of voice, and great prostration, he thought worth while to give battle to the disease, and still fight for life. With this view he spent his winters in Menton, and the summer on the Scottish lochs, where he could be out in the fresh air most of the days, and, in the mean time, took cod-liver oil and the hypophosphites. During the following few years he was a confirmed invalid and had many *ups* and *downs*, returning hemorrhage and several relapses. After the second year the disease appeared in the left lung, but, finally the local disease began to diminish, improvement commenced, and cicatrization took place in both lungs, leaving him for a time quite asthmatic when subject to the influence of colds. Notwithstanding this improvement he had a sensation of lassitude and prostration, which continued for a period of ten years, sufficiently to keep him out of the arena of society and active practice, and which showed he was still under the influence of the tubercular cachexia. In the upper region of the right lung there is yet a dry cavity into which the air enters with a sound like air whistllng through a key-hole.

Dr. Bennet holds to the theory that pulmonary consumption is essentially a disease of defective nutrition, the result of exhausted or lowered vitality, and therefore a cool, dry, sunny, stimulating climate is most likely to rouse depressed vitality and restore health.

Following out this idea, and never going where it was too hot or too cold, but where he could spend the most of every day comfortably in the open air, taking daily cod-liver oil and the hypophosphites, living on a generous diet, avoiding fatigue and retiring at regular and early hours, is the course he has pursued for years, and to which persistent course he attributes his recovery.

A man with the nervous temperament and activity of Dr. Bennet could not be idle, and, while it was necessary to remain in the open air, he could not be content to wander about to no purpose, so he turned horticulturist, or, if you please, floriculturist, and now, after ten years or more of hard work on some terraces and the side of a barren mountain three hundred feet above the sea, a mile from town, he is rewarded with having one of the finest gardens on this part of the continent. Here may be seen innumerable flowering plants blooming in the open air the entire year, winter as well as summer.

In this short letter I cannot describe the magnitude and beauty of this garden, with its terraces, its grand promenade, its round tower, its fern lined grottoes, its vine covered plateau, its glass houses, its unique little nooks, its innumerable flowering plants of all kinds and descriptions, and its three hundred different species of the cactaceæ, for I could give you but a faint idea of its beauty and contents, and the immense amount of time and labor bestowed upon it. The doctor makes it a point to spend most every afternoon from half past one to half past five o'clock in the garden, for six months in the year. Or, when worried and fatigued from professional work, it then becomes his asylum, where he repairs to rest and allows no one to disturb him, or call him away; princes, counts, earls, marquises, lords, noblemen, aristocrats, rich and poor, all must wait his pleasure.

It is this kind of care that he excercises over himself that enables him yet to do a great amount of professional work. To see him pass to and fro, in his quick business way, as I do every day, you would scarcely take him to be the invalid he has been, and, although still laboring under a diminished breathing capacity, now at the age of fifty-eight, looks hale and hearty, and quite as well preserved as most professional men of his age. For about ten

years he has been able to practice in Menton, during the six months he is here; and the remainder of the time attends to a consultation practice in London, a few hours in the day.

When Dr. Bennet first came to Menton it was only an old, cramped up Italian town on the mountain side, known abroad only by a few travelers that chanced to pass through here by diligences on their way to and from Italy. But after Dr. Bennet had spent a few winters here, he then visited southern Italy, Corsica, Sicily, Algeria and Spain to study their climates, as health resorts for consumptives, and not having found the Eldorado, he then came to the conclusion that Menton was superior to them all. He then published his observations and experience in book-form, which not only caused persons of almost every clime and nation to seek this place as a health resort, but also caused the town to extend from a mere point on the beach to a distance of four miles; and, in the place of one or two hotels *de ordinaire* may now be counted at least twenty splendid, well-kept ones, with as many more pensions and elegant villas. This shows what one man can accomplish although he be an invalid. In the old Italian town of Menton the streets are only a few feet wide, into which the sun can scarcely enter. It was built, like all Italian towns, for defense. But modern Menton, fronting a fine avenue and promenade facing the sea for four miles in extent, is scarcely excelled in elegance and beauty by any small place on the continent.

The population of Menton during the season is about 6000, not including eighteen or twenty doctors who *infest* the place, and who are wont to grow rich off the poor invalids.

The invalid, in whose behalf we have spent the winter here, although not improving as rapidly as we desire, yet we hope, with the returning spring, to have renewed strength and vigor, sufficient to enable us to visit the principal ancient cities of Italy, and then, for a while, to breathe the pure air of Switzerland and Germany, and, finally, to return home restored to health and strength.

Monaco, five miles west of here, receives quite a number of invalids, although it is not so much of a health-resort as it is a resort for pleasure-seekers, pigeon-shooters and gamblers generally.

The kingdom of Monaco is the oldest and smallest in the world, so small that, by a little practice, you might throw a stone across any part of it into the sea, yet it contains a population of six hundred. The casino and gardens in the new part, called Monte-Carlo, are among the finest in the world. Here gambling is legalized, and, being the only place of the kind in Europe where it is protected by the law, it is largely patronized. There are several good hotels at Monte-Carlo, and it is warm and well protected from the winds, but the vice of gambling has destroyed the place for a health resort, and so we pass it by.

Bordighera, eleven miles east of Menton, is a very picturesque old Italian town, perched on a mountain ridge, that is beginning to be something of a health resort, since the hotels here are so crowded. There is a large gorge in the mountains near the town, from which the cold winds descend, and which causes it to be colder than Menton. There are two or three fine hotels at which invalids can be comfortable. Bordighera is noted for its far-famed palm-groves, which surround the town on all sides, growing with truly oriental vigor and luxuriance, and giving a very eastern character to the landscape. These palm-trees are of all sizes, from a few feet to a hundred, and of all ages, from a few years to a thousand, or more. The Vatican is supplied with the palm trees from here for the decorations during the festive days at Rome.

San-Remo, a town about fifteen miles east of Menton, and containing

twice the population, is considered a very good place for invalids, and, next to Menton, the warmest of all the towns on this part of the Mediteranean. It has four or five good hotels, and now, since the Empress of Russia is residing there for the winter, it is attracting attention as a winter sanitarium, and no doubt after this will be largely patronized, especially by the Russians.

I might write to you much in reference of the primitive customs and habits of the natives of this place, and tell you much about their mode of life, but space will not permit, and I must close with the remark that, although we are staying in a country much older than the Christian era, yet we find it far less advanced in the mechanic arts, civilization and science, than our beloved young America. Very respectfully, yours,

A. J. M.

CINCINNATI HOSPITAL.

JONES STATION, O. MARCH 26, 1875.

Mr. F. J. MAYER, *Member of the Board of Trustees of the Cincinnati Hospital*:

DEAR SIR:—I have noticed a communication in the *Cincinnati Commercial*, of January 21st, in which an effort is made to defend your Board, and its staff, against certain criticisms lately made by medical students, who at a public meeting, by resolution, censured your Board for permitting Drs. Comegys, Muscroft, and other members of your staff to enrich themselves by taking money from medical students for special and extra hospital instruction.

The defense admits that the law requires all members of the staff to serve without compensation, but claims that it is silent as to ward teaching. Here it does not say whether they may or may not charge for their services. This is a remarkable position, but exactly the one occupied by your staff. Let us illustrate it by assuming that there is a general law against theft, but it does not name Cincinnati; hence, he who commits a larceny in Cincinnati should go unpunished. This argument, which proceeds on the principle that a whole does not contain all its parts, though weak to most minds, must be satisfactory to the seven wise men who, under an oath of office, have sworn to administer the affairs of the Hospital according to law.

In reply to the charge that important cases were kept away from the public lectures, and that the teaching in the amphitheater was neglected, the defense claims that the teaching in the amphitheater was thorough and complete, and that no cases were kept back, as had been charged.

Does your staff prevaricate? If this be true wherefore the necessity of ward instruction? Moreover, the defense admits that some omissions had taken place, but contends that they were unavoidable. One instance is named where the teacher appeared but declined to lecture because a patient failed to come into the Hospital from some part of the city. Is not this remarkable? Think of a great Hospital containing 480 patients, and a popular hour for clinics had to be given up because a cripple outside of the institution failed to keep his promise and limp into the amphitheater of the Hospital. There is not a college dispensary in the city so pressed for clinical material.

Here let me call your attention to an article published in the local columns of the *Cincinnati Commercial* the morning following the resolution of the staff to recommend to your Board, for appointment as house physicians, none but such candidates as had been members of their private

classes. It bears strong evidence of having been written by a member of your staff, who, conscious of guilt, makes haste to enter upon his defense before he is formally accused. It is a fulsome laudation of the Hospital, declaring the impossibility of partiality in the examinations for house physicians. Again we ask, will your staff prevaricate? Is it impossible for students, while in the wards, to have their attention directed to particular subjects which are to be considered during the examination? Is it impossible for members of staff to consult the register in the clerk's office which contains the names and the numbers of the candidates? Is it impossible for a father to recognize the handwriting of his son? In short, is it impossible for your staff to do just what it seems they have done, to wit: Select their sons and ward students as Hospital physicians on the result of an examination for which they had been specially prepared while receiving instruction from members of your staff in the wards of the Hospital?

In the *Cincinnati Commercial** of the 15th, is published an address by a member of your staff, in which, with characteristic egotism, he refers to the great benefits derived from ward instruction as conducted by certain members of your staff.

Let me here say that I do not object to ward teaching, but, on the contrary, I do contend that no Hospital course can be complete without it. Every candidate for graduation in the colleges should be required to give attention to it—not, however, under the direction of an irresponsible and mercenary staff, who have no interest in or sympathy for the medical colleges of the city, and who apply the most abusive epithets to those members of college faculties who dare to criticise the management of the Hospital, and call attention to their mercenary and unlawful course. All the clinical, and especially the ward, instruction should be given by college faculties, who are directly responsible to the profession for the qualifications of those who are admitted to its ranks. The gentlemen teaching in the practical departments of the colleges should be permitted to go with their students to the Hospital, and into the wards, and there demonstrate, at the bedside of the sick, their didactic teaching. For this purpose the Cincinnati Hospital was created, and this was the practice for a long time—for forty years. The legislation of 1861 could not have intended, did not intend, to take this privilege away from the colleges, but to open the way for all to enjoy it equally. That it failed to establish and maintain this equality of college faculties on the Hospital staff, under the management of your Board, is known to all. The failure is attributable to the ambiguity of the language of the law and the depravity of the human heart.

In conclusion, I must assure you that I have written to you candidly—always careful to state nothing but facts, and inferences carefully drawn from them. If, however, I have stated for truth that which is false, I desire you, at your earliest convenience, to point it out, and I will cheerfully make the correction.

R. C. S. Reed.

Book Notices.

Experimentation on Animals, as a means of knowledge in Physiology, Pathology and Practical Medicine By J. C. Dalton, M. D., Prof. of Physiology in the College of Physicians and Surgeons; 16mo. pp. 71. 1874.

*The *Commercial* is certainly very kind in publishing so many articles in fulsome praise of the Hospital. Is it the organ of your Board?

This little work is devoted to the defence of vivisection. Quite an outcry has recently been made against this mode of experimentation, and it has even been proposed to enact laws against it. Dr. Dalton proves the necessity of it, and shows, by a description of its character, that it is not necessarily attended with much pain to the animals subjected to it—the infliction of pain tending more or less to mar the success of the experiment. As a rule, all the cutting operations are performed under the influence of ether, and the animal is as completely unconscious of what is going on, as the húman patient, while suffering an amputation.

It is quite a valuable little work.

Editorial.

Signs of Commencing Disintegration.—Dr. Wm. P. Thornton inform us that he has resigned his position upon the staff of the Cincinnati Hospital. A year ago he handed in his resignation, but was induced to withdraw it.

Dr. T., at no time, has felt at ease upon the staff. Report has it that he has not regarded the position as creditable with the gentlemen that he has been compelled to recognize as colleagues. Although we sympathize with him in his feelings, we regret that he has felt it incumbent upon himself to resign. But it is coming rapidly to that point when no respectable physician can be induced to be a member of the staff—when those who compose it will be "rag-tail and bob-tail." When it has come to this, we think the profession will *require* the retirement of the two "leading spirits of the staff."

Academy of Medicine of Cincinnati.—The President announced the following as the list of officers, standing committees and sections for the year 1875:

Officers.—President, D. H. Jessup, M. D.; First Vice President, C. S. Muscroft, M. D.; Second Vice President, A. Hoeltge, M. D.; Recording Secretary, Jas. G. Hyndman, M. D,; Corresponding Secretary, Geo. B. Orr, M. D.; Treasurer, B. Stanton, M. D.; Librarian, Samual Nickles, M. D.; Trustees, A. Rosenfeld, M. D.; John Ludlow, M. D.; and W. W. Henderson, M. D.

Standing Committees.

Admissions.—Drs. Geo. B. Orr, Julius Wise, J. C. McMechan.

Ethics.—Drs. J. H. Buckner, W. R. Woodward, A. Hoeltge.

Publications.—Drs. P. S. Conner, Geo. E. Walton, A. L. Carrick.

Executive.—Drs. M. B. Wright, Geo. Holdt, J. J. Quinn.

Advisory Committee.—Drs. W. W. Dawson, C. S. Muscroft, B. Stanton.

Sections

Physiology and Hygiene.—Drs. Whittaker, Quinn, Steves, Sittle, Wade, Thompson, Davy, Fogel, Hoeltge.

Pathology and Morbid Anatomy.—Drs. Longworth, Bramble, Gobrecht, F. A. Anderson, J. T. Wise, Schwagmeyer, Culbertson, Cilley, Brent.

Materia Medica and New Remedies—Drs. Carrick, Nickles, Temple, Woodward, Walton, Schmidt, Cassatt, Bettman, Bender, W. B. Davis.

Forensic Medicine aud Toxicology.—Drs. Clark, Barrows, Schneider, Dandridge, Phythian, King, W. T. Brown, White, Manfred, Webb.

Skin Diseases.—Drs. Juler, C. O. Wright, Riffe, A. M. Brown, Foster, Fishburn, Barrows, Isham.

Diseases of the Nervous System.—Drs. Holdt, Bartholow, Henderson, Wm. Judkins, Norton, Stanton, Vattier, Klein.

Venereal Diseases.—Drs. Underhill, Stich, O. E. Davis, Young, Reed, Stark, Haile, Foertmeyer, Graff.

Ophthalmology and Otology.—Drs. Seely, Williams, Buckner, Aub, Ayres, Marcus, Dunlap, Schmuck.

Diseases of the Abdomen.—Drs. Hadlock, Heighway, Maley, Gerwe, Hyndman, Jones, Groesbeck, Julius Wise, C. A. Miller.

Diseases of the Thorax.—Drs. Graham, Kramer, Logan, Baum, Mackoy, John Davis, Wenning, Langenbeck.

Prevalent Diseases.—Drs. Quinn, Bigney, Goodin, Goddard, Raschig, Murray, Colter, Zipperlin, Kellar, Illoway, Hettlich.

Zymotic and Blood Diseases.—Drs. Nedemyer, Mosenmyer, Drake, Querner, Keck, Hosmer, Greene, Goode, Clendenin.

Obstetrics and Diseases of Women and Children.—Drs. McMechan, Reamy, Miles, Palmer, Tate, M. B. Wright, Cleveland, Taylor, Trush, Ludlow, Rosenfeld.

Surgery.—Drs. Muscroft, Dawson, Mussey, Wood, Young, Conner, Bramble, Orr, B. F. Miller, Thomas, Chas. Anderson.

American Medical Association.—The twenty-sixth annual session will be held in the city of Louisville, Ky., on Tuesday, May 4, 1875, at 11 o'clock, A. M.

"The delegates shall receive their appointment from permanently organized State Medical Societies, and such County and District Medical Societies as are recognized by representation in their respective State Societies, and from the Medical Department of the Army and Navy of the United States."

"Each State, County, aud District Medical Society entitled to represention shall have the privilege of sending to the Association one delegate for every ten of its regular resident members, and one for every additional fraction of more than half that number: *Provided*, however, that the number of delegates for any particular State, territory, county, city, or town shall not exceed the ratio of one in ten of the resident physicians who may have signed the Code of Ethics of the Association."

"The Chairman of the several sections shall prepare and read in the general sessions of the Association, papers on the advances and discoveries of the past year in the branches of science included in their respective sections. * * *"—By-Laws, Art. II., Sec. 4.

On the Diseases of Minnesota and the Northwest: Dr. D. W. Hand, Minnesota, Chairman.

On Prize Essays: Dr. John Davies Jackson, Kentcky, Chairman.

On Necrology: Dr. S. C. Chew, Maryland, Chairman.

On Rank of Medical Department of the Army: Dr. J. M. Toner, District of Columbia, Chairman.

On International Medical Association: Dr. J. M. Toner, District of Columbia, Chairman.

On Memorial on Dr. Henry Miller, deceased: Dr. S. D. Gross, Pennsylvania, Chairman.

On Memorial on Dr. Geo. Mendenhall, deceased: Dr. J. Murphy, Ohio, Chairman.

The following amendments to the Plan of Organization are to be acted upon—

By Dr. H. B. Baker, Michigan: "The officers of the several Sections shall be nominated by the Section in and for which said officers are to sorve."

By Dr. Adams Jewett, Ohio: "The Permanent Members shall consist of all those who have served in the capacity of delegates, and of such other members as shall have received the appointment by unanimous vote, and of all others who, being members in good standing of any State or local medical society entitled to representation in this body, shall, after being vouched for by at least three members, be elected to membership by a vote of three fourths of the delegates in attendance, and shall continue such so long as they remain in good standing in the body of which they were members when they were elected to membership in this Association, and comply with the requirements of its By-Laws."

☞ Secretaries of all State Medical Societies that have adopted the Code of Ethics are respectfully requested to forward to the undersigned a complete list of the officers, with their Postoffice addresses, of those County and District Medical Societies entitled to representation in their respective bodies. This is the only guide for the Committee of Arrangements in determining as to the reception of delegates.

It will also enable the Permanent Secretary to present a correct report of the medical organizations in fellowship with the Association.

Wm. B. Atkinson, M. D., *Permanent Secretary.*

Science vs. Spiritism.—At a meeting of the New York County Medical Society, January 12, 1875, Dr. J. C. Peters remarked at length upon the trickery of so-called spiritual manifestations and mind reading, and in conclusion presented the following resolution:

Resolved, That a Committee of five be appointed by the Chair to consider, and at their convenience report upon the following questions:

First—Is the state and condition of mind known generally as the mesmeric state a reality or a deception?

Second—If it is a real physiological state, what are the conditions necessary to its production, and what are the phenomena attending it?

Third—Is it a state to which one mind can subject another, or does it depend upon some conditions voluntarily submitted to by the individual?

Fourth—Is it possible while in this so-called mesmeric trance, or at any other time, or in any other condition known to man, in his mundane experience, for one person to divine what is passing in the mind of another except through the medium of signs?

Fifth—Is there any such faculty known to our race as perceiving by some mysterious second-sight, what is transpiring in places far beyond the reach of ordinary human vision, or what is written on paper when an opaque object lies between it and the person attempting to read?

Sixth—Is there any evidence that the well-known law of gravitation is ever overcome by a force hitherto unrecognized by scientists?

The resolution was adopted, and the following gentlemen named as the committee: Dr. Ellsworth Elliott, Dr. J. C. Peters, Dr. Fordyce Baker, Dr. Austin Flint, Sr., Dr. A. B. Crosby.—*Alta.*

Plants and Animals as Indicators of the Purity of Waters.—In some recent investigations into the purity of drinking waters, M. Gerardin found that aquatic plants were sensitive to the variation in the qualities of water; but that sensitiveness was unequal in its character. The most delicate test was that of cress (*cresson de fontaine*), whose presence showed that

of excellent water. M. Gerardin cites instances in which such cress perished after a few hours, owing to the entrance into the stream of feculent water. He describes various other water plants, all more or less sensitive to the action of impure water. Among the most robust of such plants he instances the *arundo phragmites*, which resists the action of the most impure water. Among animals the mollusc known as the *Physa fontinalis* only exists in very pure waters; the *valvata piscinalis* in healthy water; others supported themselves in a medium quality; but no mullusc can live in absolutely impure water. Hence phanerogamous vegetables and molluscs indicate the different character of water in regard to purity; but infusoria, cryptogamic plants, and especially the algæ, afford also indication in the succcessive changes they undergo by impurification of the water. These inferior organisms survive after the disappearance of fish, molluscs and green plants.—*Med. and Surg. Reporter.*

ON CADAVERIC POISONING.—The observation is made by Dr. Odenius, of Lund, that poisoning from the fluids of a cadaver can take place even when the operator has no abrasion or wound upon his skin. Dr. Odenius has experienced this twice in his own person, and attributes it to direct absorption. Chills and local gangrene followed. Of course, such instances are confined to those who have a certain predisposition, and a fine, thin skin, and follow from prolonged exposure to the cadaveric, putrescent fluids. The article we quote from is in the *Allgemeine Medicinische Central Zeitung*, No. 95, 1874.—*Med. and Surg. Reporter.*

A CHEAP METHOD OF COLLECTING MEDICAL JOURNALS.—Many individuals scattered over the country east of the Rocky Mountains are already well acquainted with the art of collecting medical journals without paying for them—an art very extensively practised. But for the benefit of persons not so informed, we publish the formula as follows: get a list of all the journals, and purchase a corresponding number of postal cards. Write to each journal, on a card, a request to forward you a specimen copy. You may add, by way of decoy, "with terms of subscription," or "with a view of subscribing." If the proprietors are the fools you take them to be, you will get a copy of every Medical Journal in the United States, free of postage to you, for one cent each. In other words, you will swindle about thirty journalists out of at least a thousand pages of reading matter, at a cost of thirty cents.—*Pa. Med. Journal.*

A CENTENNARIAN BEYOND THE DOUBT.—Very few of the published accounts of persons reported to be over a hundred years of age, come to us with satisfactory evidence of their truth. A case has lately occurred however, in which the proof appears. Phebe Thomas died recently at Wilmington, Deleware, aged 104½ years. She was a member of the Society of Friends, and the date of her birth was attested by the records of the Society. In the language of the Friends, she was born on the seventh day of the seventh month, 1770. At the age of 95 she was in the habit of driving about the country, alone, in her vehicle. A few years before her death her mind gave way.—*Pa. Med. Jour.*

THE Dr. Heeps

CINCINNATI MEDICAL NEWS.

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Original Contributions.

POST-PARTUM HEMORRHAGE.

By Wm. B. ATKINSON, M. D., Philadelphia.

A learned discussion has been going on, both in the medical associations and through the columns of our journals, upon the subject of post-partum hemorrhage. This has embraced not only the best means to meet it when present, but how to anticipate and prevent its advent.

Dr. R. C. McIntosh, Doncaster, England, having failed in restraining the hemorrhage, after grasping and kneading the uterus, using cold affusions, injecting cold water per vaginam, and also a dilute solution of perchloride of iron, finally resorted the faradism. Stœher's portable coil machine was obtained, and an interrupted current directed through the womb, one pole having been placed on the walls of the abdomen over the fundus by means of a curved plate of copper, while the other was applied to the cervix. Firm contraction speedily ensued, which remained after a short use of the current.—(*Brit. Med. Journal*, August 9, 1873.)

Dr. Whittle, London, diagnoses the occurrence of post-partum hemorrhage by the pains being strong, quick, and ceasing suddenly. He anticipates the hemorrhage by the use of ergot freely in such cases, as soon as the os is fully dilated.

Dr. Lombe Atthill thinks this trouble may be prevented by the judicious and timely use of the forceps. He often gives ergot also, sometimes combining it with strychnia.

Dr. Moorman finds the cold affusion of great service, while he agrees in the use of the forceps and ergot.

Dr. Bassatt gives iron in advance, where, from the condition of the patient, he anticipates this trouble. (*Ibid.*)

Dr. W. S. Playfair, London, is fully satisfied of the beneficial effects of injections of perchloride of iron. When decompositions of the coagula commenced, they were broken down and removed with the fingers. It would be better to examine earlier, and not permit these to remain, lest septicæmia result. Antiseptic intra-uterine injections would be advisable. (*Obstet. Journal*, May, 1873.)

Dr. H. Smith, London, has employed this remedy. He used one part to eight of water. He believes that this form of hemorrhage, after complete uterine contraction, is arterial. He believes that the iron does not produce contraction, nor by coagulation, blocking up the arteries, and that it can not be regarded as innocuous.

Dr. Graily Hewitt had seen peritonitis and death after its use.

Dr. Murray had succeeded in ten cases where other means failed.

Dr. Braxton Hicks had never seen any serious result follow its use. He had employed it a great many times.

Dr. E. H. M. Sell, of New York, had seen it employed constantly at the University of Vienna, and with satisfactory effects.

Dr. J. J. Phillips had frequently used it, and had never seen a bad result.

Dr. Snow Beck had seen death follow its injection into the uterus in nine or ten cases. He believed the usual means to promote contraction of the uterus were all sufficient, if they were used efficiently. When the local stimulus of cold or the introduction of the hand failed, sponging or swabbing the inner surface with any astringent would induce contraction, expel the hand and coagula, close the arteries and veins, stop the hemorrhage, and prevent any injurious absorption. In secondary hemorrhage, after the first week, where the walls could not be induced to contract further, sponging or swabbing with an astringent was now and then required, but it was necessary to wash out the cavity daily, to remove injurious matters, and prevent deleterious absorption.

Dr. Bantock had seen death follow such an injection in one case. He believed compression of the uterus would suffice in most cases.

Dr. Wynn Williams regarded such injections as accompanied with great risk. He emptied the clots, swabbed the interior with a sponge saturated with equal parts of the iron and water, and left the sponge to be expelled by the uterine contraction.

Dr. Protheroe Smith, though recognizing the danger, yet felt it to be a valuable remedy when others had failed. He thought the undiluted tincture of matico might be substituted, and thus avoid some of the dangers of the iron.

Dr. Holman had seen many proofs of the safety and efficacy of the iron. He always carried it with him to a case of labor, and believed he had thus saved many lives. He exhausted all other methods first.

Dr. Edis had failed with equal parts of the iron and water. Death being imminent, he injected an ounce of the pure perchloride, and the patient at once went on to recovery.

Dr. Rogers regarded it only as a *dernier ressort*. He had seen only one case in seven where its use was followed by bad results.

Dr. Barnes insisted that it did cause contraction of the uterus and closure of the arteries, and that effectually. He had often had his hand in the flaccid bleeding uterus, and felt the inner surface contracting, corrugating, crinkling under the contact of the iron as it flowed, stopping the bleeding and expelling the hand. The cases reported as having died after its use were either the result of the already exhausted state, or of septicæmia, which was certainly not caused by the iron. Flooding predisposed powerfully to septicæmic fever. This frequently occurred without the use of a styptic. Those who had seen it used once, condemmed it, while it was emphatically approved by those whose experience had been greatest. He was convinced that he had thus saved many lives. He would continue its use, and urge it on others.

Dr. H. Smith said that since he had made it a rule to give ergot to every patient after labor was over, he had fewer cases of puerperal trouble. (*Ostet. Journal*, April, 1873.)

Dr. A. B. Steele, Liverpool, after the most careful investigation, speaks from his own experience, that this mode is safe and reliable, and strongly indicated as a means of rescuing a patient from imminent danger. He does not believe that the iron acts so much from its styptic or hemostatic effect,

as from its influence as a reflex excitor of the incident nerves of the uterine walls, and by arousing the peristaltic action of the uterus. A class of cases to which this is specially adapted, is where there is recurrent hemorrhage, the uterus contracting and relaxing, and where it is scarcely safe to relax the grasp upon the uterus for hours. Here the iron at once removes all doubt and induces firm and permanent contractions. (*Ibid.*, June, 1873.)

Dr. McClintock, Dublin, as a prophylactic, administers gallic acid for some weeks before labor. He chiefly relies upon an early rupture of the membranes in the second stage of labor, and the use of ergot so soon as dilatation is complete.

Dr. Atthill confirmed these views. He waited fifteen minutes after the birth before delivering the placenta.

Dr. Churchill agreed, but made the uterus expel the placenta at once.

Dr. Johnson and others agreed. (*Med. Press and Circular*, Dec. 31, 1873.)

Dr. John Bassett, Birmingham, regards granular degeneration of the kidneys with albuminuria and debility from defective nourishment as causes of the hemorrhage tendency. He gives iron and an alkali or an acid. He urges pressure upon the womb. Ergot is uncertain. When the flow is very great, he presses upon the aorta, a practice too much undervalued. Opium is of great value in cases of alternate contraction. Ergot, cold, pressure, and opium failing, he injects perchloride of iron.

Dr. W. Boyd Mushet insists upon the injection of cold water.

Dr. Heywood Smith prefers ice in the uterus.

Dr. Talfourd Jones, Brecon, succeeded well in two cases with equal parts of tr. of iron and aq. (*Brit. Med. Journal*, Dec. 20, 1873.)

Mr. Jos. Quirke, Birmingham, found the iron to succeed when all else failed. (*Ibid.*, 27, 1873.)

Dr. Ewing Whittle, Liverpool, anticipates hemorrhage when pains are strong and quick, and cease suddenly, with long intervals. He gives in such cases a full dose of ergot, and if the pains do not improve, he repeats at the end of an hour. Of course, he is cautious that the soft parts and os are first well dilated. He uses a liquid extract twice the pharmacopœia strength in a teaspoonful dose. He claims to have eliminated this complication from his obstetric practice. Has seen but one case in 3750 labors, and in that he had no ergot. (*Brit. Med. Journal*, Sept. 27, 1873.)

Dr. A. Macleod Hamilton, Liverpool, reports a case: 2ʒ perchloride in a half pint iced water injected; complete recovery. (*Ibid.*, Jan. 31, 1874, p. 137, and p. 154.)

Dr. J. Braxton Hicks favory the perchloride. He gives ergot in languid action of the uterus just as the head comes upon the perineum. (*Ibid.*, Jan 17, 1874.)

Dr. G. T. Gream objects to the iron as hurtful. He gives ergot early, as it requires at least twenty minutes to act. 60 m. of fl. ext. (*Ibid.*)

Dr. T. Snow Beck, London, opposes the iron injections as *highly injurious.* He urges cold to the uterine cavity. He asks, "is any one justified in having recourse to means which have such serious results, when other remedies, which have never been noticed to be followed by such consequences, may be employed to induce what was required—contraction of the gravid uterus?" (*Ibid.*, Jan. 3, 1874; Nov. 22, 29; Dec. 6, 1873.)

Dr. P. B. Giles, Jr., presents seven cases treated with the perchloride of iron; six recovered. He prefers ʒj to Oj in paralysis of the uterus; when it alternately contracts and dilates, a stronger solution, as ʒj to ʒiv or ʒvj. In secondary hemorrhages he swabs the bleeding point with the pure iron. (*Ostet. Journal*, Oct. 1873.)

Dr. Thomas Chambers, Edinburgh, followed this plan with complete success. (*Ibid*)

Dr. T. E. Williams, Birmingham, was successful in seven cases; one case three times; never saw the slightest ill effect, and regards the perchloride as a safeguard against septicæmia. (*Ibid.*, Dec. 1873.

Drs. W. and J. F. Keith, Sturgeon, Mo., succeeded in a frightful case with the persulphate of iron. (*Kansas City Med. Journal*, Oct. 1873.)

Dr. T. Snow Beck reports cases where death has followed the injection. (*Brit. Med. Journal*, Feb. 14, 21, 28; March 7, 21; April 4, 1874.)

Our conclusions from a limited experience of the use of this method, and from a careful review of the testimony adduced, are in favor of this means of arresting the hemorrhage. The medical attendant should carefully and earnestly employ all the usual means for inducing permanent contraction of the uterus; these failing, he should not hesitate to employ the styptic

A COUPLE OF CASES.

By Dr. C. W. Larison.

Case I.—Heart Disease.—J. M., a boy aged about three years, died on 25th of February, 1874, somewhat mysteriously. From birth till about the age of two years, he was known as a fat, heavy child, of rather irritable disposition, and in the habit of taking rather too frequently large doses of tr. opii. His bowels were quite irregular, either too much constipated or too much inclined to diarrhea. At the age of two years he was prostrated with enteritis. From this he suffered severely about four weeks. During this time there was much tympanitis, and very great tenderness, especially in the region of the ileo-cecal valve. Although the tenderness left his bowels in due course of time, they yet remained rather distended.

During the months of January and February of this year, it was noticed that he became tired upon slight exertion, yet his parents did not feel alarmed. Upon ascending a stairs he complained of a sensation of choking. On the morning of the 25th of February he seemed about as well as usual, except a slight cold. At 12 M., while sitting upon his father's lap, he attracted the attention of those present by a strange movement which resembled that of choking. But the paroxysm was momentary—instantly he was dead. Dr. Lee saw the body about fifteen minutes after the paroxysm. He suspected that death had resulted from some trouble of the heart. A post mortem examination of the body revealed that upon the superior surface of the tricuspid valve were two ulcers, circular in form, and having a diameter of about two lines each. The heart was very enlarged, and full of blood on the arterial side, but flaccid on the venous side. The mitral valve was torn from the free margin to the walls of the heart.

From this circumstance we see why the arterial side of the organ should have remained full; also why death should have taken place so suddenly.

Dissection of the bowels revealed that the ileum had been at some time the seat of violent inflammatory action, and extensive ulceration.

From the ileo-cecal valve upward for the space of several feet were numerous large cicatrices, some of which measured two and a half inches in length by one inch in breadth.

The liver was somewhat enlarged, and the left lobe appeared to have been the seat of chronic inflammation. The kidneys were slightly enlarged, but seemed of healthy texture.

The bladder was normal and full.

The lungs were normal, as were also the stomach, the pancreas and the spleen.

CASE II.—POISONING BY ACONITE.—Miss S. A. P., student, aged sixteen years, began to suffer from cephalalgia during the month of September, 1873. The progress of the ailment steadily increased, until early in December she was obliged to give up study, and about three weeks later the derangement of the nervous system was so great that she had sometimes as many as twenty spasms a day, and was entirely confined to her bed. About this time she also began to suffer from facial neuralgia, and an excessive sensitiveness of the skin, so much so that any kind of counter-irritants were intolerable. I had given her the bromides in all their forms; opium in every form possible; belladonna externally and internally; hyoscyamus, chloral hydrate, chloroform, ether, in fact, went the whole rounds of the Materia Medica, so far as medicines are adapted to the treatment of this ailment in medicinal doses, and she grew no better, but rather worse. She often took fifteen grains of lobelia every hour until she had repeated the dose five and six times, with no indication of nausea, and only a temporary relief from pain. The excessive sensibility of the cuticle suggested to me the use of aconite. Accordingly, about the 13th of January I advised her to take five drops of the tincture of aconite every four hours. Twelve hours later I saw her; she seemed to have derived no benefit from the drug, nor had it produced upon her any of the peculiar effects of the remedy.

I advised the medicine to be given in larger doses, and by the end of two days she was taking twelve drops every four hours, with the effect of lessening slightly the pain in the head and sensibility of the skin. The dose was increased from time to time, until on the 25th of January she was taking fifteen drops of the remedy every four hours. About 2 o'clock P. M. of the 25th she took a dose of the medicine, and as there was a little more than usual headache for the time I concluded to apply a few drops externally. There were a few small patches upon the scalp over the frontal bone, somewhat ulcerated, but not so much so as to attract my attention. At half past ten, in attempting to pour a few drops of the above named tinture upon the scalp, by some mishap I spilled the article upon her head in the region of these ulcers. The amount spilled I do not think amounted to one drachm, but in half an hour she was entirely insensible, and in half an hour more there was an entire loss of vision, and great impairment of hearing. She bore pinching and pricking with a pin until the blood oozed out, without showing any signs of pain, and an arm lifted from the bed fell when let go, as if she had taken chloroform to complete anæsthesia. Swallowing was almost impossiple, and conversation entirely so. But there was no nausea, so far as could be ascertained, nor any tendency to diarrhea. The pupils at first were contracted, but at the end of an hour they were enormously dilated, and remained so for twelve hours. There was a free flow of urine and the secretions generally, especially the lachrymal were more than ordinarily active. The respiration sank at one time, at the end of three hours from the time of the accident, to ten in a minute. The pulses ran slowly and at times so feebly that it was difficult to tell whether the heart was acting at all. The most fearful period was at 8 o'clock, six hours from the time she took the last dose of medicine. From this hour there was slight indication of improvement, which steadily increased until at 12 o'clock she began to dose. At four in the morning she asked for something to eat, and could converse a little. At six she was helped up to urinate, but fainted in the act; at 12 o'clock of the 26th she was quite cheerful. The pupils now were assuming their natural size and the patient was considered out of danger.

At this time she said she had no pain in the head or face, nor has she been troubled therewith since. Her convalescence was rapid, and I am in-

clined to look upon the accident as altogether favorable to the patient, although for the time it made sorry hours for the practitioner; nor can I look back upon the 25th of January, 1874, but that a feeling of ineffable horror comes over me yet, nor can I hear the word aconite pronounced, but that all the scenes of that night loom up before me like a spectre in a dream.

The treatment of this case consisted of entire quietude, free ventilation, the external and internal use of alcohol and coffee, and strychnia. Before deglutition was completely impossible, I got one half pint of a strong infusion of coffee into the stomach and about a half ounce of whisky.

After this for 12 hours we were obliged to trust to external applications, which consisted of lotions of the infusion of coffee and whisky over the abdomen, which seemed to be of decided advantage. As soon as she was able to swallow I gave her 1-30 of a grain of strychnia, which seemed to be of marked benefit. This was repeated in three hours, and afterwards every six honrs for some days.

I think in this case coffee and whisky saved the day; but had I to go through with the like again I would try, in addition to these, to get a little strychnia into the stomach as soon as possible.

The great change brought about in the nevous system by this exhibition of aconite leads me to believe that in cases of extreme pain, large doses of this article will oftentimes accomplish what we desire when all else has failed

OBSTETRICS.

Mode of increasing the strength of the operator in child births by means of forceps.

By I. FUENTES, from the Repertorio Talisciense de Medicina y. Cirugia practicas. Guadalajara, Mexico, January 15, 1875.

Translated from the Spanish by E. A. Quetin, Teacher of French in McMicken University.

One of the difficulties met with in the use of forceps is caused by the great efforts which, at times, are required in order to overcome the resistance opposed to the extraction of the fœtus. These efforts frequently exceed the power of the surgeon who, for lack of a colleague who should help him, may find himself compelled to suspend his exertions, confessing his want of physical strength, and take the assistance of some inexperienced person, whose meddling is fraught with inconvenience and perils. In such a case, I was at the bed side of a patient who, on account of the relative disproportion of the diameters and exhaustion of expulsive force, required the application of forceps. It was during the night, at an hour very unseasonable to call for assistance of a colleague; after fruitless attempts, my strength was entirely exhausted, was all in a perspiration and inexpressibly fatigued, when a practical idea occurred to my mind. I remembered how wire makers pull the copper for wire. I procured at once a strong belt which I fixed around my waist, and in it I hooked the free handles of the forceps that had been properly applied; then holding my knee against the bed side, and pulling methodically together with my waist and arms, I succeeded easily in bringing out the fœtus alive and free from injury. I don't know whether in similar instances others have thought of this means for an easier use of the instrument, but I am satisfied that when some of my colleagues will encounter such exigencies, they will not disdain the idea, and they will avail themselves of a resource which ought not to be rejected because incongruous.

THE NASAL DOUCHE: WHAT IT ACCOMPLISHES AND WHAT IT DOES NOT.

By Beverley Robinson, M. D.

Surgeon to the Manhattan eye and ear hospital (department of the throat); Physician to the Demilt Dispensary, etc.

Read before the New York Medical Library and Journal Association.

Since Roosa, Moos, Knapp, Pardee and other well-known specialists have made known to the profession the evil effects upon the organ of hearing which may and do result from the use of Weber's douche, in applying medicated solutions to the mucous lining of the nasal passages, its employment has become more restricted.

A few practitioners, it is true, have persistently denied that unfortunate sequelæ are ever directly caused by this convenient appliance. Others, more numerous, admit that inflammation of the middle ear, followed by purulent discharge, may frequently be occassioned by the douche; but they add that, when *properly* used, viz., when the patient does not swallow during the period which the operation consumes; when due attention is paid to the temperature and degree of concentration of the solution employed; to the force of the jet of liquid and the duration and frequency of the application, objection to its use are rarely, if ever, valid.

Others, again, in their writings, bid their colleagues to beware of employing the nasal douche, no matter how imperative the indication of its use may appear to be, and consider its adoption, as a method of treatment, to be ever attended with danger to the ears of the patient. Amongst these latter Professor Roosa stands forth prominently; and as he is of the opinion (Treatise on Disease of the Ear, p. 291) "that its use should be discountenanced by the profession," no doubt, when his work appeared, many of those physicians who still remained faithful to the douche, abandoned it, though loath to do so "as it is thought to be so thorough in its work of cleansing the nostrils and pharynx." (Loc. cit.)

Against this received opinion, which we deem to be a great, though generally accepted error, we here desire to enter our protest.

The nasal douche *does not*, in our estimation, do what it purports to do, viz., cleanse thoroughly the nasal passage and naso-pharyngeal cavity, but in reality leaves a considerable space untouched by its action. If such be the case, those members of the profession who gave up its use with reluctance need at present have no regrets

We will now endeaver to demonstrate the truth of the above assertion. The diameter in all directions of the jet of liquid which flows from the nozzle of the ordinary Weber's douche is certaintly not more than $\frac{1}{8}$ of $\frac{1}{6}$ of an inch. The anterior openings of the cartilaginous portion of the nose (nostrils) in the adult, and during normal respiration, are of oval form, and speaking generally, from $\frac{3}{8}$ to $\frac{1}{2}$ of an inch in the lateral, and from five eights to six eights in the antero-posterior diameter. The posterior openings are likewise somewhat oval in configuration, and about half an inch in the short, or transversal, and one inch in the long, or vertical diameter. The depth of the nasal passages at their median portion is nearly double this latter measurement; whereas the lateral diameter in this region measures, upon the floor of the fossa, or inferiorly, only six lines, and becomes rapidly narrower as we approach nearer to the roof, or superior part of the nose, where it has only about one line.

This lateral diameter does not vary much antero-posteriorly, but remains nearly the same on a given horizontal plane. These data being accepted as

true, let us see how the douche acts. When the nozzle is introduced into one of the anterior openings of the nose, and the stream begins to flow, but a few seconds usually elapse before a jet of water of like calibre with the entering one makes its exit from the opposite nostril. Now, the physiological fact upon which the use of Weber's douche is based is, that one side of the nasal and the entire naso-pharyngeal cavity being filled with liquid by hydrostatic pressure, the soft palate is raised up by the contraction of the levators palati muscles, and perfect coaptation between its posterior border and the walls of the pharynx is effected, and thus the passage-way for the escape of any quantity of liquid downwards into the pharynx is completely intercepted. The injected liquid must, therefore, of necessity, make its exit by the other side of the nasal passages, and in doing so comes in contact with all the parts contained in or limiting *the side* of these cavities through which the stream *enters.*

To this we reply that if, during the operation, one half the nasal passage, and the entire naso-pharyngeal space were flooded with liquid, we doubt not that the whole of the interior of these cavities would be cleansed and rinsed very completely. But, practically, is this often or ever the case?

We put aside temporarily, without considering them, those cases in which the passages are so much obstructed by the swollen and infiltrated condition of the mucous membrane, or from some other cause, that the stream either *can not* pass, or flows slowly and imperfectly; and we would draw attention to the following propositions:—

1. Inasmuch as in the majority of cases the column of water escapes in equal volume, and with as great force and rapidity as the entering jet, how can the passages be flooded?

2. Water naturally seeks its level, and when it can pass freely around the posterior border of the nasal septum, how can it be made evident that it goes so far upward as the vault of the pharynx, or penetrates to the depth of the nasal cavities?

3. We must remember that, in using the douche, the patient is told to bend his head over a basin or receptacle for containing the issuing liquid. The floor of the nasal passages thus becomes a plane inclined forwards and downwards, and the medicated solution employed has by the mere force of gravity, and impelling tendency to go around the septum narium and flow out by the lower meatus.

We may now return to the cases where the passages are greatly obstructed; and, first, we question whether—and though the calibre of the stream be sufficient to fill up one of the anterior openings of the nares, and be used under the condition of hydrostatic pressure ordinarily employed with the douche—whether we say, in like case the remaining portion of the side of the nasal cavities by which the stream of liquid flows in would be entirely filled. When we penetrate a short distance into these cavities their dimensions are greater in the different diameters than those of the anterior nares, and with similar calibre of orifice of exit to orifice of entrance, both being placed on the same level, the liquid must take the shortest and most direct road towards the opening of escape outwards.

If, however, the force and rapidity of the current be very great, and if owing to excess of obstruction on the opposite side to that of the entering fluid, this latter can not so quickly leave the nasal passages as it flows into them, one side, at least, of these cavities may be entirely filled with liquid; but even in that case it would only be during a few seconds.

For, admitting the possibility of the case supposed, is it not apparent that the subjective sensations of the patient would become so unpleasant, or the pressure in the nasal cavities and naso-pharyngeal space be such that the soft palate would give way almost immediately.

Some liquid would then pass into the stomach by an effort of deglutition, or else, owing to confused breathing, get into the larynx and produce a violent paroxysm of cough. In the last mentioned event the whole of the inflowing liquid would be violently rejected through the mouth and nose, whilst the operation itself would of necessity be suddenly interrupted.

We do not believe, therefore, for our part, that either the vault of the pharynx, the superior and middle turbinated bones, or the superior meatus, are cleansed at all by the nasal douche. True it is that a great deal of inspissated mucus, hard crusts, and soft, fetid secretions, are frequently brought away; and we were disposed, for a long while, to console ourselves in the belief that the nasal cavities were effectually rinsed at the termination of each operation. Experience, however, has taught us the fallacy of such a belief; and now that we inspect the nares, anteriorly after one of these washings, and, what is still better, make a rhinoscopic examination posteriorly, when it is possible, we find at times there still remains at the top of the pharynx, or around and contained in the posterior openings of the nose, strings of viscid mucus which have been left untouched. Whenever this proof is wanting we shall have to consider the striking clinical fact of a crust or large muscle shaped bit of mucus being expelled from the nose after what we inferred wrongly had been a most complete cleansing.

The explanation of this phenomenon is readily found. Large pieces of mucus have become detached from the roof of the nose, and more particularly from the cribriform plate of the ethmoid bone, the posterior surface of the nasal bones, and the upper turbinated bones, owing, no doubt, to increased temporary secretion, brought on by the use of the douche, and have fallen to the floor of the nasal cavities. Here they have been the occasion of more or less unpleasant and abnormal sensations, and a strong effort of expiration is sufficient to expel or throw them off altogether. Whilst much of the irritating and concrete mucus is thus got rid of, a certain amount remains behind, and, by the morbid alterations which it assumes, is the source of further disease, or, at all events, by its constant contact with parts already diseased, protracts or renders impossible the return of these latter to their normal state.

We would not have our readers believe that the foregoing remarks originated *wholly* with ourselves. They have been suggested partly by the perusal of an interesting communication from the pen of Thomas F. Rumbold, M. D., which appeared in the number for September, 1873, of the *St. Louis Med. and Surgical Journal*, partly by a short article in Archiv. fuer Ohrenheilkunde (vi. Bd 4 Heft, 1873), by Ludwig Schultze, of Leipzig, and partly, we feel free to add, by our own individual thought and experience. The subject of these brief remarks is assuredly one worthy of attention.

Affections of the nose are not infrequent with us. Nasal catarrh especially is met with each day and on all sides.

It becomes, therefore, the duty of every practitioner of medicine, and not merely of the specialist in diseases of the throat and nose, to know how this last mentioned and other analogous affections may be treated prudently and efficaciously; and true it is, unfortunately, the treatment of them has hitherto been most unsatisfactory. So much is this the rule, in point of fact, that already, amongst unprofessional persons, "catarrh" is classed with other "opprobria medicorum."

May not the secret of this lack of successful therapeutics be found in the statement, we ask, that thus far no instrument has come into *general* use which meets the one evidently essential indication in the treatment of every case, viz., to thoroughly cleanse the *entire* nasal cavities.

A CASE OF RECTAL POLYPUS.

By J. Trush, M. D., Prof. in Cincinnati College of Medicine and Surgery.

About the 17th of March last, the writer was called somewhat hurriedly to see the little son of Mr. W., aged about three years, who, the messenger stated, was bleeding from the bowels. On arrival found the little fellow walking about and quite cheerful; the bleeding, I was informed, had ceased, but a fleshy mass was projecting from the bowel which the father had vainly attempted to push back, under the belief that a portion of the bowel had come down.

Inspecting the parts I observed, as reported, a dark, bloody, globular body occupying the locality of the anus, resembling somewhat in appearance a partial prolapsus of the rectum in a state of intense congestion A mere touch, however, dispelled the idea of prolapsus—the projecting body was entirely too firm. Separating the nates, and passing the finger up along side of the little tumor, it readily entered the anus and rectum, could sweep clear around the anomalous body, which, within the sphincter, presented a marked constriction, being at this point about the thickness of an ordinary goose quill, whereas the projecting portion was of the magnitude of a good sized pigeon's egg. Following the stem of the growth inward to the depth of about two or two and a half inches, the finger reached the point of attachment upon the posterior wall of the rectum; here the pedicle was at least half an inch broad, but thin, the diameter of breadth corresponding with the long axis of the rectum. The nature of the case was now, of course, sufficiently plain. "A rectal polypus, with long and rather slender pedicle." I at once proceeded to remove the growth. Perceiving that the supply of blood to the polypus was quite liberal, and fearing therefore that a removal by torsion might be followed by hemorrhage, I placed a ligature upon the pedicle—having drawn down the polypus somewhat for this purpose—and with scissors severed the same external to the ligature. Immediately after section of the pedicle the stump with ligature was retracted within the sphincter. No hemorrhage followed, nor did any other untoward symptom manifest itself. The removed polypus proved to be a rather firm specimen of the cellulo-vascular variety.

In this connection I may be permitted to state that, for the last eighteen months or more, this little boy had been frequently tormented with colicky pains referred to the lower part of the abdomen; that he passed blood with his stools from time to time, and that not infrequently the act of defecation was attended with a good deal of strainiug. Besides this, the child was known to have picked his nose almost incessantly, to have moaned in his sleep and gritted his teeth, all of which were deemed "sure signs" of worms. To dislodge these intruders and disturbers of the peace of the infantile economy, all the known worm remedies had, in the course of time, been brought into requisition, but without avail—"the worms" obstinately held their ground. Since the removal of the polypus the "sure signs" have disappeared, and the vermifuges likewise, greatly to the benefit of the child. This is but one of a multitude of cases, illustrative of the pernicious practice so common with the people to dose every child that moans, or grits its teeth during sleep, or picks its nose during waking hours, with worm medicine of some kind.

In conclusion, I would beg leave to say, by way of apology for reporting so simple a case, that it was done under the impression, that cases of rectal polypi were, comparatively speaking, of infrequent occurrence—Allingham

having witnessed among four thousand cases of rectal disease but sixteen of polypus—and that consequently every instance of this kind ought to be placed on record.

Selections.

RED SOFTENING OF THE BRAIN.

From the Transactions of the Medical Society of the District of Columbia.

February 25, 1874.—Dr. W. W. Johnston presented a cerebrum, showing a large area of red softening in the left hemisphere, with accompanying meningitis. Patient aged 50 years. During early life he had enjoyed good health. For the last three years had complained of severe frontal pain, with occasional pain in the pit of the stomach, which was attributed to dyspepsia. During the winter of 1873-4, he continued his duties without interruption until Friday, February 13th, when the headache became so severe that he remained at home. Seat of pain principally at the summit of the cranium; about equally on both sides; marked insomnia, which was thought to be due to the pain. The symptoms continued unaltered until February 17, when commencing aphasia was noticed, the man being unable to express himself distinctly. Later he could speak German only, that being his native language, although when in health he could speak English fluently. Towards the end of his illness aphasia was complete. On the night of February 17th, he had two epileptiform convulsions. From this date the other symptoms continued, but there was no recurrence of the convulsions. Anæsthesia and loss of motion slowly developed on the right side, but were not complete up to 24 hours before death. Intelligence unimpaired.

Feb. 20 Towards night insomnia gave way to drowsiness, which latter increaseed during the following day. During the night of Feb. 21 he remained in a condition of semi-coma, and died next day at 9 a. m.

Autopsy, 29 hours after death: Brain very large; dura mater congested; no excess of fluid in the sub-arachnoid space. Vessels of pia mater distended with blood; congestion greater over the left hemisphere. Patches of lymph covered the vascular trunk here and there. Maximum of inflammation at a point about two inches from the median fissure, where the brain substance was softened, and a more minute examination revealed a large mass of red and softened brain tissue, with a few small recent clots. The area of softening involved the middle lobe of the left hemisphere, and extended into the posterior lobe; its anterior boundary was the Sylvian fissure, and at the inner side the corpus callosum. The destructive process, therefore, was chiefly in the white matter of the middle and posterior lobes. The grey and white matter of the right hemisphere were congested. Microscopic investigation of the disintegrated tissue showed it to consist of broken nerve-fibers, granules and blood corpuscles, with deformed cells from the grey matter.

Dr. C. H. Liebermann. When he saw the announcement of the death of this patient, he felt anxious to know the cause of death. Had known the patient for a long time: he had lived opposite his house eight years. He was a man of great industry,—a teacher of music,—and from 7 a. m. until night, every hour was occupied in the duties of his profession. The Doctor had never attended him regularly, but remembered that he suffered from frequent and severe headache, for which he took bismuth and charcoal, which gave more relief than anything he had ever taken.

Dr. L. believed that the whole of the morbid lesions before us had been developed within ten days. A remarkable fact in the history of the case was the inability to speak English before he had lost the faculty of speaking German. Would ask Dr. Johnston how he ascertained that the patient retained his intelligence after aphasia had set in?

Dr. Johnston. When asked where he felt pain, the patient would indicate the seat of it with the hand.

Dr. W. H. Triplett. It was remarkable that very intellectual men frequently died in the same manner as Dr. Johnston's patient. It had been observed that fibrinous clots caused cerebral softening near the Sylvian fissure, and in the post mortem examination of such cases we found granulations on the aortic or semilunar valves. This was the history of the late Prof. Agassiz. Did Dr. Johnston examine the heart and carotid arteries for atheroma and vegetations?

Dr. Johnston. The softening began in that part of the brain which was not the seat of intelligence. The development of symptoms in the case pointed to inflammatory rather than embolic softening; the maximum of intensity being at the end and not at the beginning of the attack. The pathological appearance also supported this view. As to the cause of so rapid a destruction of brain tissue, the history afforded no explanation. The fact was again demonstated that a large portion of the white matter of the brain might be in a state of disease without interfering with intelligence. The early occurrence of aphasia without disease of the anterior lobe could be explained, in accordance with the prevalent theory of the localization of speach, by supposing a concomitant hyperœmia of parts which did not undergo softening. There was no heart trouble, and no history of rheumatism.

Dr Triplett. In all similar cases we should carefully examine the valves of the heart, for it was not the large emboli, giving rise to *bruits* during life, that led to cerebral softening, but the small ones, the presence of which could not be easily detected until after death.

Dr. J. M. Toner. His observations would lead to the deduction that embolism occurred usually while the body was at rest, and not while the patient was in active motion. This had been true of Agassiz, Judge Nelson, and Chase. From what he had seen of such cases he would infer that Dr. Johnston's patient was of a nervous, excitable temperament, and that embolus was not the cause of the attack.

Dr. Johnston. Thought we could exclude embolism from the list of causes in this case. Emboli produced yellow softening, and nothing of the sort appeared in this case. The disease was acute encephalitis; an active, destructive progress. There was no symptom of embolism; the inflammation must have begun in the white matter, thence extending to the grey, the meningitis being the last of the chain of pathological changes. Had the grey matter been attacked first, we should have had meningitis in the beginning.

PEURPERAL INSANITY.

By W. W. Godding, M. D., of Taunton, Superintendent of the Massachusetts State Lunatic Asylum.

The vagaries of lunacy, the varying phases of mental delusion, are interesting enough as a diversion, but are of very little concern to the practitioner. That "it pleased God to form poor Ned a thing of idiot mind" hardly arrests our attention beyond the passing wonder why He made him

at all; but the question, what can I do with puerperal insanity? may any hour in the day become a practical one to be decided by any one of us. Given the case; what will you do with it? Cases of peurperal mania in the great majority of instances either die within the first two or three weeks from exhaustion with typhoid symptoms, or recover somewhat rapidly, the excitement subsiding at the end of a few days or weeks, rarely continuing months. The exceptional cases neither die nor recover, but pass into chronic dementia. In the onset of the disease there are usually some slight premonitions of a wandering mind, but the nurse does not always remark them, and the explosion follows so soon that an outbreak of violence or destructiveness or obscenity may be the first intimation of what has come. You find your patient up, walking about the room, or held in bed by two or three strong women, or it may be, she is lying still, tearing her clothes, swearing, or pouring out a stream of obscenity so foul that you wonder how in her heart of hearts such phrases ever found lodgment. Now, what will you do with her? Many answer by promptly sending the case to a hospital, which I have no doubt is very often the best and only thing that can be done, though I have wondered if my considerable experience with typhoid exhaustion had any connection with this promptness. It is certainly to be gravely considered whether in the first few days after confinement the risk of removal to a hospital at any considerable distance does not more than counterbalance any possible greater benefit to be derived from hospital treatment. Consider, too, before you send to the hospital, that that is a step which once taken can never be recalled out of her life. Treat the case at home, and should it terminate fortunately, the excitement subsiding in a short time, the memory of it in the minds of friends will be of a sickness, with some delirium, a little queer as women often are after confinement. Send to the hospital, and, though the recovery is rapid and satisfactory, and the woman herself has rather a pleasant recollection of her convalescence, as is generally the case when the recovery is complete, still she has been insane, and this is never forgotton by her friends or her children; henceforward there is a certain dread of what may be in future, a skeleton in the closet, not mentioned but always there.

So, the circumstances and condition of the patient justifying, you decide to attempt the treatment at home. You want good nurses who will not gossip, and who are not afraid. The points to be gained are rest in bed, sleep, nutrition. But your patient will not stay in bed; then make her do so. Do not wear out her strength and the patience of your nurses; provide a strong brown linen waist, made full in the bosom, fastening behind, with the sleeves closed at the end and prolonged a yard beyond the hands, then you have something soft and strong that can be tied together behind the back; sometimes you will not need to keep it tied; sometimes, even when tied; she will keep struggling out of bed, and it is a constant exertion for the nurse to keep her in; then pass sheets under the arms and lash her to the bed. Have no nonsense about the looks of the thing, here is one of the cases where "the life is more than raiment." Remember it is a women's existence you are trying to save, that typhoid exhaustion is waiting for you if you let her wear out her strength. Perhaps when fairly secured in bed she will go to sleep; that is the best possible result if it comes without hypnotics; if not, perhaps food will bring it. There is an imperative demand for a good supply of easily assimilated nourishment. The patient usually takes it irregularly, but tact on the part of the nurse will generally ensure its being taken without forced feeding. Milk I have found about as well taken as anything, which reminds me to say here, entirely out of connection, that you need have little concern about the milk in the breasts; a

broken breast is the rarest event in puerperal mania; conservative nature closes this drain on the system at once without your interference.

But you do not get sleep with the administration of food, or from the horizontal position in bed; what then? You have bromide of potassium, chloral hydrate, morphia, including subcutaneous injection of the latter. I would try them in full doses in the order I have named. If they succeed, and they often will partially at least, well; if not, do not overpower the strength by cumulative doses of narcotics, they will not generally give what you are seeking; but darken your room, keep your nurses back, maintain the horizontal position and dare to wait. It is wonderful how long sometimes the insane will live without sleep and still recover. Watch the strength, if that keeps up, and the tongue and mouth are not very dry, food is better than stimulants. You will not, however, send away all the brandy simply because the woman has recently been confined. Milk punch will sometimes give the sleep you are seeking. Convalescence will not necessarily follow sleep; sometimes there is a fair amount of sleep from the start, but the excitement goes on. In the most of these cases, I have considerable faith in bromide of potassium, in doses of twenty grains, three times daily. I often give it with compound tincture of cinchona where there is lack of strength.

After you get the sleep, remember that a little time is almost always needed before much or any improvement appears; but no improvement showing after several days, you may then fairly feel that it is better to send to the hospital. Then state to the friends that the case is likely to be of some weeks' continuance, and when decided to remove, the sooner it is done the better. Your patient can probably travel with less risk than a week earlier, and you will have the consolation of having given the case a fair trial at home, and in many cases will, I think, have the satisfaction of seeing it recover there.

VILLATE'S MIXTURE AND ITS USES.

The introduction of Villate's mixture in the surgical therapeutics is of recent origin. A French veterinary surgeon having stated that, with the use of this solution, he daily cured caries of bones in animals, and especially in the horse, Dr. Notta first thought of applying the remedy to the human subject, and in March, 1863, he published six observations. The celebrated Nelaton heard of the result, and gave it a trial in his extensive practice, both in the hospital and outside. His successes were such as to bring this new therapeutical agent to the notice of the medical world.

In March, 1866, Dr. Notta published two memoirs confirmatory of these assertions, which proved to be worthy of a premium from the Academy of Medicine, and a reward of three thousand francs.

It was in January, 1829, that Villate, the author of this solution, made known his first successes.

In 1831, Mr. Miroud gives the formula of the mixture of Mr. Villate, and says: "I have had several times the opportunity of observing its salutary effects in cases of caries. I noticed that it hastened the exfoliation of the necrosed or carious parts, gave a more healthy appearance to discolored surfaces, and had a tendency to stop certain morbid exhalations.

During the ensuing ten years no mention is made of this preparation. Some practitioners used it, but never published the results of their observations.

Up to 1842 the operation on the horse for fistulous withers was very frequently performed; but from that time, and since the publication of some very good observations on the use of this mixture injected in the fistulas resulting from caries of the fibro-cartilage of the bone of the foot (javart cartilagineux), that operation was altogether put aside.

From this date the solution became generally known, and the reputation of a few eminent veterinary surgeons is due solely to the rapid cures obtained by the use of this preparation.

They employed it against denuded surfaces, fistulas, caries, necrocis, profuse secretions, catarrhs of the ear, and some skin diseases of long standing. They always observed that the greater the chronicity the more satisfactory was the result. Its use was to be kept up until complete recovery. Even in cases where instruments had to be used for the removal of a large sequestrum, the topical application of this agent subsequent, as also previous to the operation, has always proved itself superior to all other known substances.

It has been used in caries of almost every bone and articulation of the body; in cold abscesses of the neck, deltoid region, back, superior third of the thigh; in fistules resulting from abscesses by congestion; those of the lachrymal gland, of the anus, of tuberculous affections of the testicle, etc. Diluted in water, one part to ten, it is said to cure every case of gleet.

Though I am inclined to believe that the efficacy of the mixture has been exaggerated by its advocates, still I do not doubt of the accuracy of the observations gathered and published, and think it a good addition to our therapeutics. Lately, in Paris, Dr. Polaillon cured several cases of chronic otorrhœa with this solution. The facts were so evident, the treatment so simple, that I concluded to use it in such cases, should I have an opportunity. During the last two years I have used it successfully four times; and in my researches, having failed to find any mention made by American physicians where this preparation has been used, I concluded to present to the Association my observations, with a few general remarks on the mixture.

The original formula of this solution, as first composed by Villate, is as follows:

℞. Liquoris plumbi subacetatis, ℥i.; zinci sulphatis, crystal, and cupri sulphatis, crystal, aa ʒss.; aceti vini albi, fl. ℥vjss. Mix. Dissolve the salts in the vinegar and add the subacetate of lead. Shake before using.

Dorvault, Bouchardat, and some other authors, put ℥viij. of vinegar instead of ℥vjss; but Dr. Notta does not think that this modification is of any advantage, and perfers Villate's original formula.

It is very important that this preparation should be made as I stated. Druggists very often substitute for the white-wine vinegar a solution of pyroligneous acid, in which case the liquid acts like a powerful caustic, and the patient can not bear its application. These two solutions can be very easily distinguished at first sight; when the pyroligneous acid is used, the solution, once settled, has a bluish hue; but when prepared with the white-wine vinegar it has a greenish hue. This is a capital point, for surgeons have noticed a great difference in using both preparations on the same patient. The pyroligneous acid solution has produced excessive pains and serious symptoms of irritation and inflammation.

I do not understand the idea of Villate in combining such substances, for the result is a general decomposition.

Evidently the mixture of Villate owes its precious qualities in therapeutics to the presence of all those substances entering into its composition, and not to any special one to the exclusion of the others. Each of these salts

tried alone acts more or less like an astringent or a caustic, but does not give the results; therefore, however strange seems to be the preparation, it is preferable not to modify it, as some have proposed to do.

The mixture of Villate, when first injected into a fistule, or applied to a wound, produces a sharp pain which may last an hour or more; but the patient soon becomes accustomed to it, and in a few days bears it without complaining. To avoid violent pains in nervous or irritable patients, it should be at first diluted with water, and the dilution gradually made stronger until they can bear it pure. The first injections determine inflammation in the parts coming in contact with the solution. Those inflammatory symptoms are generally limited. Suppuration is more abundant, but will soon diminish and stop entirely, which indicates a rapid process of cicatrization. In caries, flakes of bones will very often be washed out by the injections, or thrown out with the suppuration, but after their elimination the cure will soon follow.

Judging from the effects produced, the mixture of Villate seems to act as a mild caustic in stimulating the wounds, and sometimes in forming on the surface a thin eschar, or a false membrane, which, when removed, leaves a healthy and granulating tissue ready for cicatrization. This escharotic action in some cases may be too active, therefore it is necessary to watch the effects of the mixture, and not to allow it to remain in the bottom of wounds. The mixture of Villate could not be used, like tincture of iodine, in the treatment of cysts or circumscribed collections; in other words, in cavities not communicating with the exterior, into which more or less tincture of iodine can be safely injected. It is necessary that it should run out easily; it should, therefore, be employed only in the treatment of those cavities communicating with the exterior by means of fistulas.

The effects of these injections are local. Some authors, however, declare that when the injections stop profuse suppurations, the modification brought over the local affections is such that patients recuperate very fast, appetite and strength are restored, and they themselves call the attention of the surgeon to the change—Dr. R. R. HOPKINS, *in the New Orleans Med. and Surg. Journal.*

THE USE OF DAVIDSON'S SYRINGE AS AN ASPIRATOR.

By J. ST. P. GIBSON, M. D., Waynesboro, Va.

In country practice, we are often driven to our wit's end to devise substitutes to use in extreme cases for more perfect instruments. In Virginia, this is more frequently the case since the war than before; for practice was then more remunerative, and physicians could better afford to buy instruments.

August 24th, 1874, 7 P. M., I was called in consultation in the case of Mr. J. C., who had been unable to make any water since the evening before. Without entering into the details of the case, which would be irrelevant to the object in view, I would simply state that Mr. C. was a very old man, eighty-four years, and that his protrate gland was very much enlarged; that failing to relieve him by other means, at 2 A. M. of the 25th, we prepared a Davidson's syringe in the following manner: A piece of gum tubing, about three inches long, with a small quill tied securely in one end, was slipped upon and tied to the metal suction end; then a small piece of gum tubing, about one fourth of an inch in diameter and three fourths of an inch long, was tied to a capillary tube or point of a hypodermic syringe. The

Davidson syringe was then entirely filled with warm water from a tin cup one fourth full—both ends of it being held under the water. The hypodermic point, with the wire nearly through it, was thrust into the bladder through the abdominal wall at a point about three fourths of an inch above the pubes; the wire was then passed through the tube to satisfy us that it was not obstructed, and withdrawn. The urine immediately commenced to flow, drop by drop, through the tube. The quill was then inserted into the piece of tubing on the hypodermic point, which made the connection complete between the bladder and the water in the cup. We then pumped out, in about an hour, two pints of urine.

Owing to the shortness of the hypodermic point, it being only about an inch long, it had to be held steadily and closely against the abdomen. The patient was relieved in this way several times, but never afterwards was more than a pint of urine drawn off at a time, which would take about half an hour.

It is hardly necessary to say that the punctures seemed perfectly innoxious. Indeed, it was even difficult, from one time to another, to find the former puncture; and although the case ended unfavorably, we were satisfied the punctures did no harm.

THE CONTAGION OF PUERPERAL FEVER.

The contagious nature of puerperal fever, and the various ways in which it may be communicated, is a question of the greatest importance to both the profession and the public. A knowledge of what has been written on this point, and of the many interesting cases bearing on it, ought to be in the possession of every one who intends to practice midwifery, for without such knowledge he may unconsciously carry with him the contagion, and communicate it to those under his care; and even with such knowledge it may be, in some instances, impossible to avoid becoming the agent of this terrible disease. Puerperal fever is a term which embraces a number of diseases having different causes, symptoms, and anatomical lesions. One class of these maladies is that brought on in the puerperal woman by contact with the poison of an acute specific disease, as typhus or erysipelas. In these cases there can be no question of the contagious character of the affection, for instances are recorded in which the puerperal woman has been the means of communicating the original disease to a third person. Another class of cases is that which is due to absorption by the vagina of a poison introduced by the examining finger of the accoucheur. The poison in these cases may be the cadaveric or decomposing animal matter, such as the discharge from the generative organs of a patient suffering from puerperal fever; or it may be the contagion of an acute specific disease. There is a third class of diseases which is included under the term puerperal fever, which is generated within the body of the patient, the cause being decomposition and absorption of coagula or portions of the placenta retained in the uterus, or the breaking up and entrance into the circulation of a clot which has formed in the uterine vessels. The form of the disease depending on the introduction into the vagina or the formation within the body of a poison other than the acute specific contagion, is not contagious in the sense that typhus fever and erysipelas are, but it is certain that it is not unfrequently communicated by the intervention of a third person, that person being the medical attendent. Numerous instances are on record of outbreaks of puerperal fever in which all or almost all the cases occurred

in the practice of one man. Dr. ARMSTRONG says that out of forty-three cases which occurred in Sunderland in 1813, forty happened in the practice of one surgeon and his assistant. Dr. GORDON observed, with reference to the epidemic which took place in Aberdeen in the year 1789-90, that the disease attacked such women only as were visited or delivered by a practitioner, or taken care of by a man who had previously attended patients affected with the same disorder. ROBERTON states that from December 3, 1830, to January 4, 1831, a midwife attended thirty patients for a public charity; sixteen of these were attacked with puerperal fever, and they all died. In the same month 380 women were delivered by other midwives for that institution, but none of the 380 suffered in the smallest degree. Evidence of this kind might easily be multiplied, but we have said enough to show that the disease is in some cases contagious in the sense typhus is, and that in all cases it is communicable by the accoucheur or midwife. And this is not to be wondered at, for we know how difficult—nay, how impossible, it is for time to remove from the hands which have been engaged in making a post-mortem examination the odor of the cadaver, even by the most abundant ablutions and the careful use of disinfectants. We know, also, what a small quantity of septic poison is sufficient to engender a fatal disease even in a healthy person; but in the puerperal woman the poison acts at a great advantage, because her system is in a more or less exhausted state after the parturient efforts, and it is engaged in throwing off waste products—the wasting from severe muscular action and from the involution going on in the uterus. Besides, the poison, when communicated by the examining finger, is introduced to a part capable of absorbing rapidly, and one which, at that time, is wounded, bruised, and sore from the mechanical violence to which it has been subjected. Under these circumstances the patient is peculiarly susceptible to the slightest contagion or inoculation. Again, practitioners of midwifery find it their duty frequently, during the first few days after labor, to examine the vaginal discharge. In this manner their hands become more or less tainted; and, if the patient be suffering from puerperal fever, this taint is sufficient, even after the most careful washing and use of disinfectants, to communicate the disease to a patient examined soon after. With midwives it is far worse, for generally they act both as nurse and midwife to the poor patients on whom they attend; and thus they have daily to perform the part of nurses, and consequently have their hands, however careful they may be, always tainted with discharge. Add to this the slightest carelessness in the use of soap and water and disinfectants, and there is at once formed a propagator of disease who carries death wherever she goes. This double function of midwives is probably the reason that, in recent outbreaks, they have played a more prominent part than professional men. What, then, are the duties of the medical practitioner in whose practice a case of peurperal fever has occurred? He may change his clothes, he may take any number of baths, he may use all sorts of disinfectants, and still the fatal poison may hang about him, and he may be the bearer of it. Under these ciscumstances he should refrain from practising midwifery for a season. It would be wantonly wicked in us were we to speak hesitatingly when such issues are at stake. The danger to the public arising from the non-observance of the precautions above named are incalculable, as we have seen in the outbreak in the neighborhood of the Wandsworth road and at Coventry, and whatever sacrifice the medical man may have to make in carrying out the precautions named, we unhesitatingly say he should make it. In the majority of cases, however, the sacrifice to be made would be very light indeed. Three years ago an outbreak of puerperal fever took place in a provincial town of considerable

size. On investigation it was found that all the cases had occurred in the practice of one surgeon and one midwife. The members of the profession located in the town met and requested the gentleman in question to refrain from practising midwifery for one month, and at the same time agreed to attend his cases for him. The midwife was likewise requested not to attend cases for a similar period. This was agreed to, and no new cases occurred after that date. This illustrates well the line of conduct that should be adopted by the profession in any town where this terrible disease may happen to appear. The unfortunate practitioner in whose practice the case has occurred should bring it before the profession, and should cease from attending midwifery for a time. On the other hand, his professional brethren shonld help him through his difficulty, and make his loss as small as possible by attending his cases for him during the period of his abstention.—*Lancet*, Jan. 23, 1875.

ON THE PREVENTION OF MAMMARY ABSCESSES BY THE APPLICATION OF THE PRINCIPLE OF REST.

Dr. W. BATHURST WOODMAN read a paper on this subject before the Obstetrical Society of London (*Med. Times and Gaz.*, Jan. 16, 1875). He had been struck with the rarity of mammary abscesses in animals, notwithstanding the forced abstinence from suckling which cats and dogs undergo from the drowning of their progeny, and in spite of the great distension of the udders of cows, mares, and other animals when driven to market, or for other reasons separated from their young. Acting upon this suggestion, he carefully abstained from those manipulations and questionable "gentle" frictions which have so long been customary in such cases, and with the most satisfactory results. Where an abscess was threatening, in place of employing liniments he enjoined perfect rest, the avoidence of all frictions and rough handling, and of suckling for a time—if possible from both breasts, but at all events from the most implicated; the horizontal position, careful application of strips of isinglass, soap, or lead plaster, or of an air-cushion with a hole in the centre, or of bandages taking their purchase from the opposite shoulder. In addition to these measures he employed preparations of opium, belladonna, or chloroform, applied in compresses, or ice, moist warmth, and leeches; the local congestion being also relieved by diaphoretics, diuretics, and aperients—belladonna, iodide of potassium, and sedatives being given if requisite. Illustrative cases of this method of treatment were given, exemplifying its advantages.

Dr. BARNES observed that the principle of rest had long been applied to the treatment of inflammation of the breast. He himself had learned the value of it from Trousseau, when a student in Paris thirty years ago. That admirable physician taught and illustrated it with great earnestness. He placed the breast at perfect rest by carrying straps of leather spread with *emplater de vigo* all around it, so as to lift it well up and exert constant support on the vessels. Thus œdema was prevented, and engorgement soon sudsided. It must, however, be remembered that this form of pressure was ill borne in the first inflammatory stage. It was chiefly serviceable when suppuration had taken place and the abscess had been opened; the sac then rapidly closed. In the earlier stage he had seen leeches do excellent service. The pressure then must be lighter.

Dr. ASHBURTON THOMPSON said there were two modes of treatment not referred to in this paper—the administration of tincture of aconite, and total

abstention from fluids during the necessary number of days. By giving minim doses of aconite every hour he had succeeded in cutting short inflammations of the breast which there was no doubt would otherwise have run on to suppuration very frequently; indeed, in three cases out of four. In cases of stillbirth he had hitherto found abstention from fluids sufficient in every case to avoid every kind of mammary disturbance. Ice was allowed in moderate quantity, and no other fluid, from the time of delivery until the fourth or fifth day, when the breasts generally return to their normal state of quiescence. He had had two cases recently in which this method of treatment had been perfectly successful. The deprivation of fluid caused but little distress.

Dr. Braxton Hicks thought the principle of rest had been gradually coming upon us for years, friction only being resorted to among the poor and ill-educated. Surgery at the present day was all tending to quietude. Manipulations only led to suppuration, and often produced the extra amount of stimulation required to set it up.

Dr. Murray observed that the application of belladonna plaster was of great service, keeping the arm at the same time fastened to the side. In some instances a slight process of friction upwards was productive of good.

Dr. Matthews, whilst heartily assenting to Dr. Woodman's views, thought that the public also had largely endorsed his practice, since he had observed that it was a very common proceeding to apply a large lead plaster (spread upon leather) to the breast in cases where it becomes necessary to get rid of the milk; this of course rendered friction and all meddling impossible. He had found two large and suitable handkerchiefs suitably applied—one by way of sling across the neck under the breast, the other in exactly the reverse way, over the breast, and tied around the body so as to include the breast between them, interposing a large pad of cotton-wool—to constitute a very efficient mode of applying pressure.

Dr. Edis remarked that the chief thing to be remembered was to limit the supplies, to act on the bowels, and to insure perfect rest to the mammæ. He was accustomed to order a belladonna plaster to be applied to the mammary region within twenty-four hours of delivery, thus excercising pressure as well as arresting the secretion of milk. Abstinence from fluids and great moderation in diet were enjoined for the first few days, an aperient mixture of sulphate of magnesia and iodide of potassium being given twice or thrice daily to relieve the bowels. The shoulders should be raised, and the arms kept perfectly quiet; the upper part of the chest being only lightly covered; any friction or drawing of the breasts being strictly prohibited. Where this method had been adopted he had never seen a single instance of mammary abscess. An evaporating lotion continuously applied to the mammæ was in some instances sufficient to prevent the secretion of milk; but the pressure obtained from the plaster was of great service, and effectually prevented the employment of any friction.

TREATMENT OF PROLAPSE OF THE UMBILICAL CORD.

Dr. G. J. Engelmann observes that there are cases of prolapse in which it is not desirable to leave the progress of the labor wholly to the powers of nature—cases in which interference is necessary, yet no indications for operation exist. Now the first and most simple assistance that can be rendered is to properly direct the patient's voluntary efforts; either, as the state of the case demands, keeping her quietly in one position, refraining

from pressure with the abdominal muscles, or, when labor is far advanced, to encourage her to aid the passage of the head by the exertion of all her energies. 1. Postural treatment.—Equally simple, and on that account neglected probably in clinical teaching as well as in the text-books, is the treatment by position, which is a valuable aid to the practitioner. It consists in placing the patient on the side opposite to that on which the funis has prolapsed, so that the cord may be relieved from pressure, when it may perhaps glide back into the cavity of the womb. When the prolapse takes place in one or the other sacro-iliac fossæ, the patient should be placed on her hands and knees in the elbow-position. This position, however, is unfortunately very tiresome, and if too fatiguing, the patient must be placed in the corresponding side position, on the left side if the cord has prolapsed into the right sacro-iliac fossa. Dr. Engelmann has achieved good results by this method. Position alone, as Thomas some time ago remarked, will rarely if ever cause the return of the cord without the aid of manipulation, unless the bag of water is unbroken; and even then it may not. 2. Reposition of the cord.—The carrying back of the prolapsed loop into the cavity of the womb beyond the presenting part is a treatment that has been given up as ineffective by some, whilst it is most warmly recommended by others. In Englemann's cases reposition was accomplished in only seven of the eleven cases in which it was attempted; and though apparently successful in these seven cases, the cord not reappearing, only four of the children were saved. In the out-door department the results were but little better, reposition of the prolapsed loop having been practiced in thirty-two cases, and, notwithstanding that the operation seemed to have succeeded in twenty-six of these, not more than sixteen children were saved—in fact, by reposition of the cord alone only thirteen, as delivery was hastened by operation in three other cases. The life of the child was saved in fifty per cent. of the cases in which reposition was apparently successful, and in forty per cent. of all the cases in which it was attempted; and as was only resorted to in the more favorable cases, with well pulsating cord and normal pelvis, the plan does not seem to afford much encouragement. Reposition is justifiable in many cases, but it has its strictly defined indications. With few exeptions, it must be confined to cases of prolapse with head presentations, as it is only with the rounded and resistant head that, when the loop has been carried back beyond its greatest circumference, the uterus can by its contraction prevent the immediate return of the prolapse. Not unfrequently a life is lost by too obstinate adherence to this method of treatment, the continued pressure and traction required proving fatal to the child; and in the same way, even when apparently successful, pressure at a higher point may have arrested the circulation in it. It should only be undertaken when the os is so far dilated that the escape of the waters is no longer to be feared, that, in case of necessity, delivery by forceps or turning can be immediately resorted to. The best instrument for the purpose of reposition is Robertson's funis replacer, and when apparently accomplished the fœtal heart must be closely observed, as it is by this means alone that it can be ascertained that it has been really effected; the fœtal pulse becoming strong and regular, continuing so after several pains. 3. Anæsthesia.—The use of chloroform was frequently resorted to, and proved a valuable adjuvant in achieving reposition of the cord. 4. Forceps.—The forceps were resorted to about as often as the reposition of the cord. In fifteen of the thirty cases in which it was applied the child was saved. 5. Extraction by the feet.—Extraction by the feet, simply not following version, was practised in sixty-five cases, in forty-seven of which (72.3 per cent.) a living child was developed. The success naturally depends upon the

favorable prognosis offered by breech-first labors, in which alone it can be resorted to, and the treatment is mainly a postural one. Extraction by the feet was practised in fourteen of the lying-in house cases, and in only one was the child delivered dead, putrid—a case which should justly be excluded. The results were less favorable in the out door cases, the accoucheur not frequently being called in too late. The patient should be so placed that a return of the presenting loop may be facilitated, all muscular strain must be avoided, the membranes must, if at all possible, be preserved intact until the os is sufficiently dilated, and when this is the case, the parts being yielding, we must not wait for threatened signs on the part of the fœtal pulse, but at once deliver by version. The operation which was most frequently resorted to and which proved, comparatively speaking, most successful, was turning by the feet, immediately followed by extraction. Of the 125 cases so operated on, seventy-two were favorable, 57.6 per cent. of the children were saved; and this result holds good not only for transverse and shoulder presentations, but also for head presentations. 7. Cephalotrity.—Craniotomy can certainly not be classed among the operations called for by prolapse of the funis, yet Engelmann makes mention of this operation, as it was so often necessitated for preservation of the mother, and as the large number of these operations, twenty-five amongst 365 deliveries, complicated with prolapse of the cord, most forcibly proves the frequency of the highly contracted and this distorted pelvis as cause of the prolapse. —*American Journal of Obstetrics.*

LETTERS ON THE ELEMENTS OF ELECTRO THERAPEUTICS.

A series of letters addressed to inquiring practitioners, by
GEORGE M. BEARD, M. D.

LETTER I.—*To a physician who writes to know what diseases electricity is good for.*

DEAR SIR: You ask what diseases electricity is good for. This question is a very frequent one, and yet it is hardly fair; for it is impossible to answer it without going back of the question itself to a prior question—What is the *place of electricity in the materia medica?* If this question be rightly answered, then your question—what disease is electricity good for? will, in the minds of physicians who are familiar with diseases, answer itself.

If any one should ask you what quinine is good for, you would say it is a tonic and anti-periodic, and is useful when tonics or anti-periodics are needed, and without reference to the name of the disease. You would say that quinine is not exactly a specific for any one disease, although it is, for most temperaments, the best single remedy we have for intermittent fever. You would further insist that it is indicated—individual idiosyncrasies excepted—in almost every conceivable form of debility. On the strength of these propositions you would declare that to give a list of all diseases for which quinine had been successfully used, would be a waste of forces and an insult to the intelligence of your correspondent.

Similarly I reply in regard to electricity. The action of electricity is far more complex than the action of quinine. I have been accustomed to define it in its medical relations (without reference to its use in surgery) as a *stimulating sedative tonic*; for according to the method in which it is used, it is capable of stimulating, sedative, or tonic effects. Its primary effects are stimulating; its secondary and permanent effects are tonic, and

are to be classed with the effects that come from ocean and mountain air, sea-bathing, phosphorous, and active and passive exercise. These three orders of effects run into each other, and it is quite difficult in some cases to differentiate them. But such differentiation is not usually necessary; for the majority of cases that need tonics also need sedatives, and there are many that need also stimulation.

The primary effect of an application of electricity is stimulation, and this effect is the one that is most apparent to superficial observation. Hence it is that, in the minds of many experts in localized electrization, the stimulating effects have, so to speak, veiled and overshadowed the sedative and tonic effects, and so they have fallen almost unconsciously into the very narrow and incorrect notion that electricity is a stimulus and nothing more. This error, which has widely prevailed in Europe, is still working much mischief to the cause of electro-therapeutics. The astonishment and skepticism with which the announcement I made in 1866 that electricity was a *tonic* was received is yet fresh in my mind, and those who were more or less experts in electro-therapeutics were the most skeptical.

The idea that electricity is capable of tonic and sedative effects, having fought its way like all new truths against ignorance and opposition, is now so widely received that it may be regarded as an accepted fact. It is formally stated by Althaus, in the third edition of his work, and, if I may judge from my own experience, is but rarely disputed in professional conversation.

Accepting, then, this truth, that electricity is a stimulating, sedative tonic, we have the general indications for the use of this agent in medicine. Wherever stimulating, sedative, or tonic effects are called for, there is the place for electricity. It matters little what name is given to the disease—it may be hysteria, or spinal irritation, or neuralgia, or chronic eczema, or paralysis, or rheumatism, or severe neurasthenia—the condition of the system is the one thing needful to know; the name of the disease is useful mainly for convenience of description, and in no sense as a guide to treatment.

True enough, there are some diseases that yield more readily to electrical treatment than others; but this difference is to be explained by the difference in pathological state more than by the names, for the names of diseases are but rarely derived from their real pathology.

Hence we see the advantage of a thorough knowledge of diseases for the electro-therapeutist. He who knows most of the general pathological state from which symptoms flow will be the most intelligent in the use of electricity.

LETTER II.—*To one who wishes to know what kind of a battery he ought to get.*

DEAR SIR: Your inquiry is perhaps the most frequent one that I am called upon to answer. The question of battery is at once the first to be asked, and of the least importance of all the questions that arise to the mind of an inquirer in electro-therapeutics. * * * *

If you will tell whether you have had any experience with electricity, and how much you now intend to use it, whether mostly in medical or surgical cases, how much you are prepared to spend for a battery, and whether you want to use it in the office only, or out-doors as well—if you will enlighten me on these points, I can reply to your question with tolerable definiteness.

Times have greatly changed in the matter of batteries. It is now as difficult to get a very poor battery as formerly it was to get a very good one. If you shut up your eyes and go ahead, you will stumble on one

that very likely suits well enough your purpose. The rivalry of instrument makers is quite fierce, and it has, I am glad to say, redounded to the advantage of electro-therapeutics.

If you purchase a battery that suits you, you may very likely become attached to it, even though it be quite an ordinary affair—just as you may cherish a home that makes you happy, even though it be very humble.

It is better, in almost all cases, to begin with the simpler and not too expensive forms of batteries, and to work up by degrees into the more complex forms. You can add to your stock of batteries from year to year, if you enter deeply into this subject, just as, with an increasing family, you make from time to time additions to your house.

For my own part, I use a large variety of batteries, made by different manufacturers; in selecting which one to use in any case, I am governed by a variety of considerations, which may be brought up in subsequent correspondence.

It is a great comfort and convenience, and in some cases is indispensable, to have large powerful, and more or less expensive batteries; but if your means are limited, or if you hesitate to invest largely in an experiment, I may say, for your consolation, that some of the very best results I have ever had have been obtained with feeble and inconvenient appliances. The most happy and useful people in this world are not always those who dwell in palaces. As a house can not make a man, so a battery can not make an electrologist.

Finally, I beg you to banish forever from your mind the notion that the beginning and the end of electro-therapeutics is to get a battery.

Much also in regard to the selection and care of batteries may be learned from our stoves and other contrivances for warming a house. If I were to ask you what kind of stove I ought to get, you would reply that everything would depend on the special purpose in view. To send heat through all the rooms, some sort of furnace in the cellar is needed. To supply a large quantity of electricity for all the manifold uses of the office, a large battery is required. To heat a small bed-room, a fire-place is sufficient. To treat many cases that call for mild currents, a battery that gives but little electricity will answer.

If you buy a small stove, you do not expect to keep a fire as long as a large stove, and you will replenish it oftener. If the fire in your range gets low, you do not always make up a new fire, but you open the draft and put on more fuel; if your battery is weak, you can increase its strength without entirely refilling it, by simply pouring in (through a funnel) more of the exciting liquid.

If the weather is cold, and you need the greatest possible amount of heat, you order all the ashes taken out, the stove well cleaned and a fresh fire to be made; if an important electrolytic operation is to be performed, you pour out the old fluid of the battery, clean the plates, and put in entirely new fluid.

The modern theory—which is simple and clear, even if it is not demonstrable—reduces light, heat and electricity to mere molecular motion; forms of force that obey the same general law, very closely related to and liable to be transformed into each other. All our stoves and lamps probably generate more or less electricity as well as heat and light, and it is certain that our batteries generate heat with their electricity. Batteries, like stoves and lamps, are simple contrivances for generating force, and all force represents molecular change.

It is as impossible to get a battery that will run forever without cleaning or care, as it is to get a stove or lamp that will forever give light and heat

without shaking down the ashes, trimming the wick, and at proper times putting in a fresh and liberal supply of oil or coal.

LETTER III.—*To one who asks whether it is right to use internal Medication at the same time with electrical treatment.*

DEAR DOCTOR: Certainly. Why not? Electricity is a force, not a drug. It is given outside, while medicines are given inside. When an electric current goes through the body, it leaves no substance in its track; it simply changes the molecular arrangement of the tissues, and the powerful and varied stimulating, sedative, and tonic effects of electrical applications are the result of these molecular changes. Electrical treatment is therefore fully compatible, not only with internal medication, but also with any other form of outward application.

But more than this is true; electrical treatment is greatly aided by internal treatment, and *vice versa.* Better relief and cure follow the combined use of internal and external tonic medication, than from their use in succession.

For how, I ask, would you go to work to get a stump out of the ground? Would you hitch up a single horse and let him pull without stirring it until he was all tired out, and take him off and hitch on another until he in turn was used up, and so on until all your horses were panting in the stable, while your stump was as firm in the ground as ever? Would you not rather hitch on three or four horses at once, and make them pull at once, with a long pull, and a strong pull, until the stump was hauled clear out?

Just so should you wish to raise, by a hard pull, and a pull all together, an exhausted nervous system. It is often times a waste of force to try the various tonic remedies *in succession*, for each one fails, leaving the patient as deeply sunk in weakness and despondency as ever. But join together zinc, and phosphorous, hygiene and electricity, and let them pull together, and your patient may be rapidly brought out.

Electricity works in harmony with all other tonic and upbuilding influences. Your iron and phosphorous, your cod-liver oil, and your arsenic, may all fail when used alone, but when electricity is added, the work may be done.

PHYSIOLOGY IN EDUCATION.

In the advancing knowledge of physiology it has been discovered that all mental culture should be based upon the brain—that education should be pursued in harmony with the laws of life and health, and that where these are violated, the advantages of the former afford poor compensation. Formerly no attention, or scarcely any, was paid by school boards and teachers, in the matter of education, to the condition of the body or the development of the brain, and even at the present day very little is paid them compared with what should be given to those great physical laws which underlie all mental culture. The lives of a multitude of children and youth are sacrificed every year in this Common-wealth by violating the laws of physiology and hygiene, through mistaken or wrong methods of mental training; besides, the constitution and health of a multitude of others are thus impaired or broken down for life. Nowhere else in society is a radical reform needed more than in our educational systems.

Inasmuch as the laws of the body lie at the foundation of all proper culture, they should receive the first consideration. But in educating the boy or girl, from the age of five to fifteen, how little attention is given to the

growth and physical changes which necessarily occur at this most important period of life! The age of the child should be considered; the place of schooling, the hours of confinement and recreation, the number and kinds of studies, together with the modes of teaching, should all harmonize with physical laws—especially those of the brain. The system or mode of training, in education, all children as though their organizations were precisely alike, is based upon a false and unnatural theory. Great injury, in a variety of ways, results from this wrong treatment; in fact, injuries are thus inflicted upon the sensitve organizations and susceptible minds of young children, from which they never recover. That many of our most independent and clear-headed educators themselves express so much dissatisfaction with the working and results of our schools, affords evidence that something is wrong in the present system. As we contemplate the great improvements made in education for the last thirty or forty years, and are surprised that educators were content to tolerate the state of things then existing, so will the next generation, when still greater and more radical changes shall have been introduced, look back with astonishment at this generation, and wonder that it was so well satisfied with its own methods. When our educators become thoroughly convinced that physical development as a part of education is an absolute necess ty, that a strict observance of the laws of physiology and hygiene is indispensable to the highest mental culture, then we shall have vital and radical changes in our educational systems; then the brain will not be cultivated so much at the expense of the body, neither will the nervous temperament be so unduly developed in proportion to the other parts of the system, now so often bringing on a train of neuralgic diseases which cannot easily be cured, and exposing the individual to the keenest and most intense suffering which all the advantages of mental culture fail, not unfrequently, to compensate. The more this whole subject is investigated, the more reason we shall find for making allowances or some distinction in scholastic discipline with reference to the differences in organization of children, and for adapting the hours of confinement and recreation, the ventilation and temperature of school-rooms, the number and kinds of studies, the modes of teaching, etc., to the laws of the physical system.—*Address of Dr. Nathan Allen.*

ON THE TREATMENT OF THE DIARRHEA OF TYPHOID FEVER.

A paper on this subject is published by George Johnson, M. D., F. R. S., in the *Practitioner*, for January, 1875. Diarrhea being one of the most frequent symptoms of the disease, as well as one of the most troublesome, its treatment forms a very important part of the management of typhoid fever. For a number of years the practice of attempts to arrest the frequent discharges by repeated doses of opiates and astringents was adopted, but in many cases the diarrhea continued, and meanwhile the intestines were distended with gas, and the abdomen became tumid and tympanitic. Then the patients were tortured by the application of turpentine stupes to remove the tympanites.

Of late Dr. Johnson has changed his practice, having gradually arrived at the conclusion, that in the treatment of typhoid fever careful nursing and feeding are of primary importance, while, as a rule, no medicines of any kind are required, and when not required they are often worse than useless. As a rule, the fever patient at King's College Hospital has the "yellow mixture," which is simply colored water, and, except an occasional dose of chloral to procure sleep, and a tonic during convalescence, Dr. Johnson gives no active medicines of any kind. He feeds his patients mainly with milk, with the

addition of beef-tea and two raw eggs in the twenty-four hours, and he gives wine and brandy, pro re nata. For a time he adopted the method which has been strongly recommended, of giving repeated doses of diluted mineral acids, but he abandoned the practice, becoming convinced that the acids irritated the ulcerated mucous membrane, caused pain and griping, and often increased the diarrhea.

Dr. Johnson thinks that the diarrhea of a typhoid patient is often increased by his inability to digest the beef-tea and eggs which are sometimes too abundantly given. When we have reason to suspect that such is the case, it is well to keep the patient for a few days entirely upon milk, which contains all the elements required for the nutrition of the tissues in a form most easy of digestion.

With such as has here been recommended, Dr. Johnson is in every way satisfied. During the past year he had under his care in the hospital twenty-nine cases of fever; fifteen typhoid, and fourteen typhus. Some of the cases were severe, but all were discharged well. To only one of these patients was opium given, and that w is for the relief of an irritable condition of the bowels which remained after a severe attack of typhoid.—*Ex.*

RADICAL CURE FOR HERNIA.

Greensville Dowell, M. D., Galveston, thus describes his plan for the radical cure of hernia: The only instruments used are a double, spear pointed, semi-circular needle, with an eye in each point, silver wire, a piece of cork, soft wood, or a roll of adhesive plaster.

The parts being well shaven, three lines are then drawn with a brush and tincture of iodine, parallel to the direction of the hernial orifice, the centre line being immediately over the internal orifice and passing down to the external orifice, if the hernia be oblique inguinal; in other varieties, immediately over the greatest enlargement of the tumor. The needle is then taken hold of by the left hand at its unthreaded end; then the right hand, with the thumb and forefinger, pulls up the skin and superficial fascia as high as it can be done to the right of the middle line, letting the middle line be just below the point of the thumb. The threaded end is then pushed through the fold held below the point of the thumb and index finger. The fold is then let loose, and the threaded end taken by its point with the thumb and fingers of the right hand; it is then pulled on until the unthreaded end comes just under the outside line of right side of the operator, and left side of patient. The index finger of the left hand is made to invaginate the integuments as far as possible, and the finger pushed to the right under the left tendon of patient, feeling well the wall. The right hand then raises the needle so as to have its point directly over the point of the finger and a little to the outside of it. The needle is then pushed directly down through the tendon into the peritoneal cavity; at this stage, the point of the index finger of the left hand is carried to the right side of the patient, and held under the tendons; the needle is then moved about to see if it is loose, and turned in its curve so as to carry the curved portion of its point under the invaginated integuments, etc., to about a quarter of an inch of the right tendon; the end is then brought out on the outsids line of the patient's right side; this is done by pressing down on the threaded end held by the surgeon's right hand. The index finger of the left hand is then taken out, and the threaded end let go, and the unthreaded end is taken hold of by the right thumb and index finger of the right hand. It is now gently

pulled on until the threaded end comes above the tendon. The point threaded is then reversed, and, keeping well down on the tendon, is finally pushed out at the first puncture and pulled entirely out, leaving the two ends of the ligature close together in the same puncture. We have thus put a ligature entirely around the two sides of the rupture, with a sufficient portion of the tendon and muscles to give the thread sufficient surface to act on; and now, by pulling on the two ends, the rupture is closed internally, by the replacing of its natural support, and then the ends are tied around a piece of cork or soft wood. If one ligature does not close the opening, so that you can not push the point of your finger under the wire, another wire is put in in the same way. Before tying the first, you must put in enough to completely close the rupture, and they should not be more than a quarter or half an inch apart.

The operation can be performed from either side, but it is best, in inguinal hernia, to start the needle form the side opposite to the ilio-pubic ligament. This enables you to push down the needle by the side of the ligament, when, if you started on the side in the second position of the needle, you may go under the ligament.

This method is simple and easy to perform, and is applicable to all external herniæ, direct, scrotal, intestinal, inguinal, frænicular, crural, femoral, umbilical, ventral, epigastric, hypochondriac, lumbar, labial, perineal, and hernia in tunica propria cordæ testis and tunica, tropria cordæ rotundæ (in canal of Nash). The process is the same, and made with the same needle and silver wire. Of course it is not applicable to internal hernia, as diaphragmatic, obturatic, ischiatic, entrocystic, invaginal, vaginal and rectal, as they can not be reached without resorting to the *direct method*, which ought to be done in all cases of strangulated hernia, when this needle will much facilitate a closure of the incision.

The wires are to be left in from four to seven days, according to the inflammation of the parts. Lotion of sugar of lead and morphine are to be applied externally, according to circumstances.—*Trans. Texas Med. Soc.*, 1874.

Microscopy.

WIDE vs. LOW ANGLED OBJECTIVES.—THIRD PAPER.

By J. Edwards Smith, Esq., of Ashtabula, O.

Read before the Memphis Microscopical Society.

Analagous to the doctrine of "penetration" is that of "diffusion of focus," which during the last five or six years obtained credence, more especially with photographers. Mr. J. H. Dallmeyer, a London maker of photographic objectives, a few years since, introduced his "patent portrait combinations;" these were constructed so that the lenses of the rear systems could be separated—thus causing the focus to be "diffused." Mr. Dallmeyer, however, admitted that the "diffusion" so obtained was accompanied by loss of intensity of definition—nevertheless the idea "took root," and the photographic profession got "diffusion on the brain" in real earnest. The general qualities of these Dallmeyer lenses gave complete satisfaction, and *at first* this was placed to the credit of the "diffusion" doctrine. Slowly and by degrees, however, was the error unmasked, and the result is that the leading photographers to-day are quite willing to use their

Dallmeyer objectives with the rear systems screwed "home," where they properly belong.

But, to return to the main issue, I desire to be distinctly understood—the practical microscopist has no "pet theory" to advance and maintain; he desires only to secure objectives approaching as near as may be to perfection. For example, should a given low angled glass excel the performance of another of wider aperture, then, *of these two glasses*, the former will justly receive the preference. Further, it may be here stated that among even modern objectives, it is not unusual to find some glasses of moderate angles that surpass others having wider apertures—all this is plain, consistent and in harmony with the positions assumed in my previous papers.

The principal object of these papers was to advise my brother microscopists of a prevalent and popular error, and to show plainly that what might have been fact two years ago is not necessarily fact to-day.

Believing that the matter was susceptible of demonstration, I invited, by way of proof, comparisons—(for reasons already given it would have been folly to have opposed the wide to the low angles.) I therefore presented the new 4 system glasses of Mr. Tolles, as these objectives are singularly uniform in quality, and have never yet suffered defeat either in my own hands or in those of an experienced brother microscopist. These glasses were named without knowledge, advise or consent of Mr. Tolles or his agent Mr. Stodder. Further, I selected the Tolles' 4 system one-tenth belonging to Mr. Dod, which I have never seen. With this glass then I confidently invited a trial with any low angled objective, "be it one-fifth or a one-fiftieth."

A few days since Mr. Dod sends postal card informing me that the committee chosen for the purpose had made a thorough and careful trial, and that the result was a victory for the Tolles' one-tenth, and that the positions assumed by me were fully vindicated. It is to be hoped that other and similar trials will be made, and if the competing glasses are worked to their maximum, similar results will surely follow.

The idea has lately been advanced by Dr. Richardson, that errors in manipulation, occurring in a competitive trial of objectives, are to be regarded as constant factors—a constant quantity affecting *equally* either objective. This palpable blunder has been very handsomely and effectively ventilated by my friend, Prof. Thacker, in January number of the CINCINNATI MEDICAL NEWS, 1875. I now cite a case in point.

Your Secretary, Mr. Dod, lately wrote me, on trial of his new one-tenth over the Moller probbe platte, by lamplight, that he saw the striæ of Nos. 18 and 19, but failed of No. 20—a. pellucida. It being suggested that his stage might be too thick, Mr. D. shortly after sent me a sketch (drawn occurately to scale) developing the fact that this stage would not admit a beam of greater obliquity than 45° from axis=to aperture of 90°! This is suggestive of a few practical reflections.

First. Mr. Dod was using an objective having aperture of 180°, while his stage was shutting out *one half* the aperture! Hence—

Second. In his attempt to display No. 20 lines on Moller platte with angle from axis of only 45°, Mr. Dod was simply attempting almost an impossibility Nevertheless had Mr. Dod used a very thin stage, and with very oblique beam displayed the striæ of No. 20, then the angle might have been carefully and gradually diminished, even to 45° from axis, without losing sight of the striæ.

Third. Mr. Dod in recognizing the striæ of No. 19, and using only angle of 45° from axis, furnished *involuntary evidence* of the superlative quality of his Tolles' one-tenth; and the results obtained by him simply add potency

to my own testimony (also that of others) as to the splendid performances of the Tolles 4 systems by *centrally disposed light.*

Let some one endeavor (conversely) to exhibit the striæ of No. 19 on Moller platte, using the best one-tenth of 90° aperture obtainable, and report results.

OBJECT GLASSES.

By CHARLES STODDER, Esq., Boston, Massachussetts.

The short paragraph headed "Object Glasses" in the NEWS for April, is well adapted for calling the attention of American and foreign microscopists to the recent progress in the construction of microscope lenses. Among a large proportion of American microscopists, the idea is generally prevalent that good instruments are only made abroad, and not in this country, and this idea is encouraged and supported by the importers and dealers in instruments. Why? simply because they can make three to four times the profit on foreign instruments that they can on those made here—and that idea has not been confuted by the course pursued by the generality of the American periodicals in consequence of not giving full information of the comparative merits of American and foreign work shops. It is well that this journal has admitted evidence that the best lenses are now made here—*some* have known it for twenty years.

The article in the April issue is very well, of the right tenor, but it does not tell the whole story, as known to the writer. The Powell and Lealand one-fourth, "showing the lines of amphipleura pellucida"—made on new formula (*M. M. Jour. Jan.*, 1875,)—was undoubtedly produced to "beat all hollow" the Tolles' duplex front (4 systems) sent to London Nov. 1873, which was shown to that firm. The first public notice of it is to be found in the report of the scientific meeting of the Royal Microscopical Society, held last December. Tolles had made a one-fourth duplex front for a gentleman in New Jersey *several months* before that date, which showed the lines of *that test* superbly. The 1-16th P. & L. referred to by Mr. Morehouse, in the March number of this journal, is *probably* of the same improved formula, as it was made last autumn. Mr. Morehouse speaks highly of its qualities. The writer can do more, as he saw it before Mr. M. did, and he can say without reserve that it is the finest objective he ever saw made in Europe; yet it is only just to say that a Tolles' one-sixth duplex gave better results on the most difficult test than did the so-called 1-16th. As for the Ross objectives, constructed after Mr. Wenham's new formula, "by dispensing with six surfaces." The facts are, that Mr. Wenham published that formula in the M. M. Journal, April, 1873, describing it as having a single back plano-convex of crown glass, a triple middle and single front, and claimed great merit for its good qualities, (it can certainly be made with much less labor to the working opticians than Tolles' formula of seven or eight lenses, therefore being more profitable to the maker). Little or nothing has been heard of them other than the *advertisement* of the "firm" of Ross and Co. One of them has been here and went back again to be improved. The President of the Royal Microscopical Society, in his annual address—*Monthly Microscopical Jour.* for March—refers to Ross' objectives on Mr. Wenham's new formula; but he describes that; and now it has two plano-convex for the back; thus introducing two more surfaces and reducing the "dispensation" of surfaces to four instead of six, and showing that Mr. Wenham (consulting engineer of Ross & Co.—see *Scientific American*) had

abandoned so soon his much self-praised improvement within a year or eighteen months of its first public announcement!

As for the fact of using the same front either "dry" or "wet," both Wales and Tolles have made their objectives so for five or six years, *probably before any immersion lenses* were made in London. So that is but copying from America.

EXPLANATORY NOTE OF THE DIAGNOSIS OF BLOOD STAINS.

By Jos. G. Richardson, M. D., Microscopist to the Pennsylvania Hospital.

In an article by Dr. J. J. Woodward, in the last issue of this journal, elicited by my paper on blood stains published in the number for July, 1874, it is stated that we can never "affirm truthfully on the strength of microscopical investigation that a given stain is positively composed of human blood." With this statement I fully agree, maintaining, however, that, whilst it is literally true, it is not the whole truth, because it often happens in practice, that *evidence other than microscopical*, narrows down the conditions of a case to the question: Is this stain human blood or that of an ox, pig, or sheep? The microscopist can then, in such cases, from fair specimens of blood spots, as ordinarily produced, affirm truthfully that "a given stain is positively composed of human blood," should it really be so, and this if doubted I can conclusively prove.

In respect to the *just* prominence which should be given to the circumstance that "the blood corpuscles of a few mammals approach so nearly in size to those of man as to render their distinction doubtful," a fact which I thus mention in my essay in this journal for July, 1869, of which the paper of July, 1874, is a continuation (see also *hand book of Med. Micros.*, p. 288), I think Dr. Woodward undervalues in the first place the prudence of our many medical brethren who possess microscopes without considering themselves experts; and, second, that he has overlooked in the calculation (which we both, perhaps, equally sought to make, of how to secure for humanity, by our researches, the greatest benefit with the least injury) one important factor, viz., the shrewd-witted lawyer, to be found in every country town, who would infallibly see that not one syllable of the carefully worded statements in my paper, supported any unqualified microscopist's claim to distinguish human from dog's or monkey's blood. Hence, trusting to this powerful element for the protection of the two or three innocent persons who might otherwise be endangered, I felt (honestly if mistakenly), whilst writing both my first paper and its continuation, that, should I more than indicate the animals which render our conclusions doubtful, my work might be utterly condemned as prejudicial to the interests of society, and myself perhaps compared (should I emphasize and reiterate the fact that science alone could not detect the falsehood of a criminal's story if he cunningly asserted that suspicious stains were made by the blood of a dog) to a toxicologist publishing a treatise, setting forth most faithfully the method by which poisoners may best destroy their victims with the least danger of detection in their crimes.* Be it remembered also, that in all cases a really innocent person, wrongly accused of murder, on the ground of blood stains upon his clothing, etc., actually produced from that "constant" (yet rarely slaughtered) "companion of man," the dog, or from a seal, or otter,

* The gendarmerie of Valenciennes have just arrested a Dutchmann whose profession is, to say the least of it, extraordinary. He is a dealer in all sorts of instruments employed by burglars and thieves. When arrested he had in his possession a large stock of phamplets giving the fullest directions as to the best plan for waylaying people on the high roads, and also how to kill them without any noise in case of resistance.

needs no microscopist to prompt him into telling (and trying to confirm), *when first arrested*, the *true* origin of the suspicious blood spots.

These various considerations led me to publish my results in a guarded manner, but, now that all responsibility for harm has been removed, I am glad, for the sake of a *few* who might draw erroneous inferences from my former papers, to say most emphatically, that I believe we can not at present distinguish positively, in dried stains, between the blood corpuscles of man and those of any mammal in which the disks measure on an average over $\frac{1}{4000}$ of an inch. Hence, therefore, until further discoveries are made, a microscopist's best efforts at revealing crime can only serve the cause of right and justice in those cases where the criminal's attorneys, in spite of being *forewarned* and consequently forearmed, fail to prepare or suborn testimony skillfully enough to convince the jury that some dog, rabbit, elephant, monkey, etc., has been killed, in such a way as to produce blood stains which are likely to be confounded with those of the murdered victim. That I was induced to avoid specifically stating this failure of our science by no unfounded apprehension of evil results, is *proved* by the fact that after my evidence was delivered in the Larribee trial at Franklin, Pa., the prisoner's counsel, a "shrewd-witted lawyer," in order to account for spots of the defendant's boots, brought two women into court who testified that the boots were sprinkled as they stood in a corner of the kitchen, by a puppy which jumped away from them just as they got one ear cut, and ran round the room shaking its bleeding head. Further to substantiate this tale, a dog with one ear clipped was shown to the jury, and sworn to as the very one from which the blood was shed. Fortunatly, however, it so happened that I had examined two spots on the prisoner's pantaloons, finding them to be human blood, in contradistinction to pheasant's blood, as he first explained them to be, and since the contrivers of this dog story apparently forgot that the pantaloons were not standing up in the boots, to be sprinkled with them, their ingenious theory failed to gain credence with the jurors, who brought in a verdict of guilty. I venture however to predict that from this explanatory note, *and* the essay which made it necessary, will spring a host of bloody dog tales to account for suspicious stains on the clothing, etc., of murderers, until even attorneys for the defence become themselves ashamed to put forward this thin, worn-out plea.

In regard to the supposed greater accuracy of Carl Schmidt's observation, that dried and remoistened blood corpuscles shrink nearly one half, I desire to add that I think it is chiefly accurate concerning specimens of *crenated* corpuscles, such as form when considerable quantities of blood undergo desiccation, and will be pleased at any time to demonstrate the general correctness of my measurements of the disks in the thin films of true *blood stains* as emphatically distinguished from *masses* of dried blood.—*Amer. Jour. of Med. Sciences.*

MR. WENHAM'S "SLIT" FOR TESTING ANGLE OF OBJECTIVE.—Mr. R. B. Tolles, in a late number of the *Monthly Microscopical Journal*, in speaking of the "slit" devised by Mr. Wenham to cut off false light says: "I may as well state here what is of *real* importance in *using such* an objective as the $\frac{1}{6}$th, *i. e.* of maximum (or large), angle and long working distance through cover. That objective goes best with the *thicker* covers, therefore the thin covers 1-300th to 1-100th should be supplemented with glycerine instead of water. This gives best command of *all* thicknesses of cover, notably if the objective is *corrected for best work* through the nearly *thickest covers* it will penetrate."

BIOLOGICAL AND MICROSCOPICAL SECTION OF THE ACADEMY OF NATURAL SCIENCES.

Director W. S. W. RUSCHENBERGER, M. D., in the chair.

February 1, 1875.

Dr. J. Cheston Morris, chairman of the committee appointed to examine optically the one-twenty-fifth and one-fiftieth objectives displayed at the late Exhibition of the Section, made a report, which was referred to a committee, and of which the following is an abstract:

The lenses submitted for examination were a one-sixth, one-tenth, and one-fiftieth made by Tolles, all immersion, a one-twenty-fifth immersion by Wales, and a one-fiftieth, dry, made by Powell & Lealand. The points which we considered it requisite for us to examine were, 1st, flatness and clearness of field; 2d, definition; 3d, penetration; 4th, resolution; 5th, angle of aperture; 6th, achromatism; 7th, amplification; 8th, working focus. Penetration or depthing is the property by which a lens shows us with tolerable distinctness objects or structures lying just within or beyond the best focal point or plane, and is of the greatest importance in tissue investigations. [As a method for testing penetration (hitherto a desideratum), Dr. Morris proposes to examine a cover ground so as to be one one-hundredth of an inch thinner on one edge than its opposite, and to measure with an eye-piece micrometer the breadth of the band of ground glass distinctly visible (flatness of field being presupposed)]. Again, resolving power is the property of showing certain lines, markings, or shadows on diatoms, etc., and may or may not co-exist with best defining power; it depends in great measure upon angle of aperture, and is to a great extent an antagonistic property to penetration. The dependence of resolving power upon angle of aperture is very well shown by placing a Pleurosigma angulatum, for instance, under a one-fourth or one-tenth, with such an eye-piece as will amplify sufficiently, and putting the compound body horizontally in front of a direct light. In this position no lines will be seen, but by rotating the compound body on its axis an oblique light is obtained, which at different angles, according to the power of the objective, will bring out transverse or oblique lines, and finally dots appearing as hexagons. The following results were thus obtained:

POWER EMPLOYED.	TRANSVERSE LINES.	OBLIQUE LINES.	HEXAGONS.	TOTAL OBSCURATION.	ANGLE OF APERTURE.
	deg.	deg	deg.	deg	deg.
Spencer's one half inch, C eye-piece (lines beginning to show at 25 degrees)	25			30	60
Spencer's one-fourth inch, C eye-piece	20	25	50	60	120
" one eighth " C "		0	40	65	130
Tolles' one tenth immersion (lines broken into dots)		8	20	85	170
Wales' one-twenty-fifth, immersion			0	70	140
Powell & Lealand's one-fiftieth, dry		15	20	63	126
Tolles' one-fiftieth, immersion.			0	70	140

We found that the one-fiftieth of Tolles gave good results as to flatness and clearness of field, penetration, resolution, amplification, and working focus or distance. Its definition is only fair, as also its working angle of aperture, while as to achromatism there is much improvement to be desired, and in working focus and general usefulness much might be gained by setting the

front lens less deeply and reducing the brass work of the face. We were, however, agreeably surprised by the facility with which it it can be handled.

The one-fiftieth of Powell & Lealand was not equal to the above in clearness of field, nor in definition, nor in working focus. Its penetration was equal, as also was its amplification, but its angle of aperture was 14 degrees less.

The one-twenty-fifth of Wales is a very superior lens, giving good definition, resolution, and penetration, while its other qualities are very fair.

The one-tenth of Tolles, although constructed mainly for use with oblique light, showed itself a good lens, with direct central rays, as to flatness and clearness of field, definition, amplification, and resolution; its angle of aperture is wonderful, while its achromatism and even its penetration are very fair, and its working focus sufficient.

From the observation noted above we deduce one very important fact, viz: That the different appearances of lines, dots, hexagons, etc. on Pleurosigma angulatum are not only the varied results of angle of aperture, of amplification, and of illumination, but that they may be obtained with less and less obliquity of light as we increase the power of the objective; thus making it evident that high powers with direct central light show us clearly things which we rather guessed at than saw (owing to the increased chance of spherical and chromatic aberration and distortion from the employment of oblique light) with lower ones.

We would conclude, therefore, by recommending these high-power lenses to those engaged in microscopic research, not as capable of doing all work —a one-inch is as indispensable to a histologist as a one-fourth—but as likely to be proportionately useful in unraveling the mysteries of organic life.

Dr. J. Gibbons Hunt desired it to be distinctly understood that he had nothing to do with the preparation of the report, and did not wish to be held responsible as a member of the committee for the views advanced in it. He considered that it embodied the obsolete views of Carpenter and Beale in regard to penetration, which term should be dropped from the vocabulary of microscopists. He believed that penetration and resolution can be and have been combined in the best objectives.

Dr. J. Cheston Morris stated that the report was based upon a careful and conscientious examination of the objectives by the committee, and was in accordance with the well known laws of reflection and refraction of light. He had submitted the report to Prof. George F. Barker (of the University of Pennsylvania), who had approved it so far as the optical questions were concerned, except, perhaps, on the subject of penetration, which he attributed to imperfect spherical correction. He could have wished that Dr. Hunt had expressed his dissent from the document as freely in private; when it was shown to him, as he had just done. All he did at that time was to suggest some slight alterations and additions, which being made, Dr. Morris was led to expect his adhesion to the report. As to the question of penetration being a useless one, he considersd the presence of this quality in the lenses of Tolles of great moment. High angle of aperture and penetration have not been combined in the objectives of the German, English, and French makers to the same degree.

Dr. Hunt said that what one man calls penetration another does not, terms often being used without an exact knowledge of the meaning intended to be conveyed by them. He preferred a lens that will give one absolute focus rather than three indistinct ones. The conditions of testing are frequently fallacious, and imperfect illumination is one of the most prolific sources of error. With low objectives, as, for example, a one-fifth, used with the amplifier, very satisfactory and reliable results can be obtained.

In conclusion, Dr. Hunt proposed that at some time during the next year any resident member or members of the Section should prepare one dozen microscopical preparations, extemporaneous or otherwise, representing that many different departments of microscopical work, and exhibit the same at a meeting or meetings of the Section, under his own apparatus and in his own way, the object being to test men in regard to their technological skill, he offering to do the same. Those competent may compare and judge the results.

On motion of Dr. Morris, it was resolved that the Curator be authorized to purchase for the Section a Nobert's test-plate.—*Med. Times.*

SAN FRANCISCO MICROSCOPICAL SOCIETY.

The regular meeting of the Microscopical Society was held in its rooms, on Thursday evening, March 4, with a full attendance of members. President Ashburner in the chair. Messrs. Robert Munch, C. Troyer and Theo. H. Hittell were present as visitors.

Dr. W. F. McAllister, United States Navy, was elected a corresponding member.

The Secretary announced the reception of the recent edition of the Micrographic Dictionary, a very valuable work for reference.

Dr. D. V. Dean, city chemist and microscopist of St. Louis, presented a copy of the seventh annual report of the board of health of that city, which contained valuable reports of microscopic investigations of meats and parasites.

A communication from the committee appointed to receive contributions for the National Polish Museum was read, also interesting letters from Messrs. W. H. Walmsley, of Philadelphia, J. W. Deems and Captain John H. Mortimer, of New York, corresponding members.

Dr. A. Mead Edwards, of Newark, N. J., and Mr. A. F. Dod, of Memphis, corresponding members, favored the society with lengthy and valuable letters containing assurances of interest and assistance in the good work, the latter gentleman accompaning his letter with a very interesting paper on Mr. Tolles' new 4 system immersion one-tenth objective. The notes prepared by Mr. Dod were a memorandum of the tests made by him in the way of comparison with other first-class objectives of a less angular aperture, both with central and oblique illumination, and various test objects. His results point directly to the fact that when the low-angled objectives failed to give as satisfactory results as the one-tenth, using low eye pieces, they were utterly vanquished when increased eye-piecing was applied to amplify the image; and this too with central light. The generally received doctrine that the wide angles are only valuable for work with oblique light, would seem to be overthrown, and the conclusion of Mr. Dod and the gentleman who aided in the test was unanimous that this tenth of Tolles', with the highest attainable angle of aperture, can meet the narrow angles in the field that has been hitherto regarded as peculiarly their own, and not only successfully compete with, but actually and undoubtedly surpass them, one and all.

So much has been said and written on this subject that any additional testimony is useful and interesting to all students in microscopy, and Mr. H. C. Hyde, Vice President of the society, who has given the mechanical features of the microscope in their adaptability to test objects a large amount of his attention, was called upon to make some remarks on the subject.

Using the blackboard and accompanying his statements by the reading of a paper by J. Edwards Smith, of Ashtabula, O., published in the microscopical department of the CINCINNATI MEDICAL NEWS, Mr. Hyde was able to so explain the matter as to interest and instruct all present.

Mr. Munch exhibited some fine drawings from the microscope, of various minerals and rock sections, which were peculiarly beautiful and valuable for their accuracy and detailed finish.

Mr. Hanks exhibited a binocular microscope which he had caused to be made from a pattern of his own, and a number of which he had imported for miners and mineralogists. The want of such an instrument has long been felt, and the combination of its many features, in the way of portability, movements and cheapness, were noted satisfactorily.

Mr. W. H. Pratt, corresponding member, donated four slides, mounted by him with the anthers and pollen of sweet elysium; pollen from the osage orange; fly's foot, and fine gold.

Dr. J. W. Winter donated two slides with objects, prepared and mounted by him in balsam, being a longitudinal and transverse section of human cuspidata, showing very clearly the enamel, dental tubulars, cementum and periosteum.

Mr. Henry Edwards, honorary member, donated two specimens of the dytiscus marginalis, from Europe, and which is a favorite object with microscopists for the tarsi; also, a great variety of material, for examination and mounting, in the way of insects.

Mr. C. G. Ewing donated a slide, mounted with a microscopic barnacle in glycerine taken out of a shell, found on the bottom of the steamship *Vasco de Gama.*

Perhaps the most valued acquisition for future research is that of the donation by Mr. Fisher, of the U. S. S *Tuscarora,* of samples of a series of twenty-three deep sea soundings from Cape Flattery to the Aleutian Islands, and of twenty-six from San Diego to Honolulu. These have been arranged, numbered and labeled, with statistics regarding latitude, longitude, depth and temperature, in each case, by Dr. H W. Harkness, assisted by Messrs. J. P. Moore and Kinne, and form a field for study for months to come.

After the exhibition by Mr. Hyde of a series of very beautifully and wonderfully arranged slides, particularly one, which was a picture made up of butterfly scales, arranged as a bouquet of flowers in a vase of diatoms, etc., with two birds, lizard and various insects, mounted by Dalton, London, the meeting adjourned.

The stated meeting was held at the Society's rooms, Thursday evening, March 18, with President Ashburner in the cbair, and a fair attendance of resident members. Dr. Eisen, correspondjng member, and Mr. W. A. Skidmore, visited the rooms.

Two proposals for resident membership were received, and Henry Molineaux, Esq., was elected as such.

Under the head of donations to the cabinet, Mr. C. G. Ewing presented a slide mounted with a colony of polyps, *sertularia,* in glycerine, from San Pedro Bay.

Col. C. Mason Kinne donated five slides, mounted by him, comprising the elytron of a beetle, showing very marked peculiarities; raw cotton from near Visalia, Cal.; scale of salmon; raw cotton from New Mexico; and white horse hair; the three last named being mounted in balsam, for the polariscope, and which proved worthy objects for observation with that accessory. Col. Kinne exhibited some living *protococcus,* which vegetable, moving freely in the same drop of water with the animal forms *paramecium*

vorticella and others, aided to show how nearly the two great kingdoms are allied in the so-called lower forms of life.

Dr. Eisen exhibited the tentacles of a barnacle (*lepas*), and a variety of marine algæ (*ulva*).

Mr. Hyde, Vice-President of the Society, read an interesting letter addressed to the members of the Society, from Mr. Joseph Beck, of London, corresponding member, from which we quote the following: "It is for those enthusiastic and ardent workers with our favorite instrument, living in new countries, and surrounded with objects inviting their examination, that we expect fresh contributions to our stock of knowledge. In microscopical apparatus there is but little new. We have increased the angle of our achromatic condenser to suit the purposes of those who are still studying the ultimate structure of the diatomaceæ, and under the direction and with the assistance of Mr. Sorby, are introducing various novelties in connection with the spectroscope, which is still claiming much attention. The intricate nature of some of these investigations, and the uncertainties attending some of them, have led some even to doubt the value of results obtained; but each new fact is a step in advance, and I cannot but believe that in due time the appearance presented under this instrument will be of great value to science. We have yet much to learn, and I think that one branch that may be of use will be the ascertaining of the time required for the absorption by vegetables of certain substances, thus aiding both the farmer and the fruit-grower in the cultivation of their crops. Some of the most interesting lectures we have had over here have been on the instincts and query reasoning faculties of insects, by Sir J. Lubbock, and on the great discoveries of submarine matters resulting from the expedition of the *Challenger*.

An adjourned meeting was held at the rooms of the society on Thursday evening, April 8th, with a full attendance of members. Mr. H. Edwards, honorary member, Dr. A. Barkan, Dr. Geo. H. Powers, Dr. A. P. Hayne, Prof. Wm. H. Brewer, and Messrs. S. Heydenfeldt, Jr., Chas. E. Case, Sam. B. Christy and B. B. Redding, were present as visitors.

Messrs. Wm. A. Woodward and W. F. Myers were elected resident members.

The last number of the CINCINNATI MEDICAL NEWS was laid on the table by the Secretary, and the following periodicals were received by donation, viz: *Overland Monthly*, from the publishers; *The Western Lancet*, from Dr. Stout, and copies of lists of American Microscopical Societies, from R. H. Ward, editor microscopical department of *American Naturalist*.

The Society was also the recipient of a valuable gift from Dr. J. N. Eckel of this city, in the work of his distinguished countryman, Ehrenberg, on microscopic geology. It is truly a great work—one now very rare—embodying the results of the life-long labor of one of the most celebrated scientists of the age on microscopic research, illustrating the microscopic marvels of earth and ocean, as found in various parts of the world, in a series of large and beautifully colored plates, with all that perfection of detail for which the German engravers are so justly celebrated. The Society may be congratulated on the acquisition of so valuable an addition to its library.

The following was unanimously adopted:

Resolved, That the thanks of the San Francisco Microscopical Society be tendered to Dr. J. N. Eckel of this city, for his magnificent and valuable donation of "Ehrenberg's Mikrogeologie," and that the trustees be authorized to extend to Dr. Eckel the courtesies of the rooms and apparatus, with a cordial invitation to use them at his pleasure.

Under the head of donations to the cabinet, Mr. C. D. Gibbes presented a portion of a nest supposed to have been made from wild hemp; a sample of hard-pan, twenty-one feet below the surface of the ground, and a fungus found on wild rose, all from Middle river, San Joaquin.

Dr. Gustaf Eisen presented four slides, mounted by him with fresh water algæ, palate of physa radula, pedicellarium of echinus, and sphœridium of echinus. Dr. Eisen explained the position and formation of the latter, using the blackboard, and stated that it was considered the organ of taste in the well-known sea urchin.

Mr. Hanks called attention to a sample of infusorial earth in the cabinet, and stated that a fragment of the same, placed in the hands of a London microscopist by Captain Mortimer, corresponding member, had proved exceedingly interesting, and to contain some rare minute forms of fossil diatomaceæ.

The feature of the evening was a lecture by Dr. Adolp Barkan on the construction and uses of the ophthalmoscope. The doctor used the blackboard with facility, giving a technical description of the various parts of the human eye, aided by frequent diagrams, and illustrated by reference to the eyes of a rabbit and a hog, from which the light of other days had departed.

Commenting on the need of an instrument to enable one to see the interior of a living human eye, he stated that up to 1845 no such had been obtained; but acting on the fact then discovered, that light entering the eye was not absorbed but reflected, and that the interior of the body could be made luminous, Professor Helmholtz, in 1851, invented an instrument which had the desired effect of illuminating the eye; and catching the rays in the rebound, so to speak, the observer found a new field for his scientific powers.

The practical uses of the ophthalmoscope are of enormous value, as the diagnosis of a disease in and on the rear portion of the eye can be made without guess work, the various substances and coats of the optic being shown with astonishing clearness.

After exhibiting patterns of the instrument, and stating that although some forty odd varieties had been invented, none were of any practical improvement on the one first produced by Helmholtz, who had seemed to hit on the right thing at once, Dr. Barkan brought out his managerie of living animals and proceeded to demonstrate what could be seen.

An immense frog, strapped to a piece of board, stared and blinked at the interested scientists, and proved himself a tractable and worthy aid to the evening's study. A subcutaneous injection of a solution of cinnabar filled his blood vessels with minute crystals, and pouring down the interior of the eye could be seen the coursing blood, with now and then a flashing sparkle of the cinnabar.

A rabbit claimed its share of attention, and the instrument brought out the peculiar construction of its eye, the absence of pigment and insertion of the optic nerve being noticeable.

A cat, swathed and enclosed in a heavy sack for obvious reasons, attracted her quota of observers, and richly repaid them all. The peculiar manner in which the light was reflected in colors of red, green and yellow made a picture not before deemed possible to the casual observer.

A pleasantly disposed dog was interviewed with the instrument, and quietly permitted an intelligent gleam to sparkle forth, showing much the same beauties as were by his feline friend and co-laborer in the good cause.

After voting the doctor a hearty vote of thanks for his delightful and interesting lecture, the meeting adjourned.

THE FAIRMOUNT MICROSCOPICAL SOCIETY OF PHILADELPHIA.

This Society held its regular meeting on Thursday evening, April 15th, 1875. The main topic of the evening was the kidney and its diseases, particularly "bright's disease." It was illustrated by many fine and unique sections of the human kidney, stained by means of carmine. The explanations, volunteered by a member of the society, were remarkably clear and to the point. Quite a series of drawings, made direct from the instrument, of urinary deposits, was shown at the same time, tracing the course of the above disease in several patients under treatment by the demonstrator. The evening was spent with much profit to those present.

MEMPHIS MICROSCOPICAL SOCIETY.

At the meeting of this society, April 3d, several matters of interest were presented. A communication was received from corresponding member, E. W. Morley, of Hudson, Ohio, giving his method of measurement, under very high magnification, of the striæ on the entire series of diatoms on the Moller's test plate. A pamphlet was also received from Dr. Geo. E. Blackham, of Dunkirk, New York, giving the history of the cases of *trichiniasis* caused by eating the diseased pork, of which specimens had previously been sent to the society. From this article it appears that the dreaded *trichinæ* is by no means so uniformly fatal in its effects as is ordinarily supposed. Nevertheless, cases are on reeord where competent medical men estimate that one cubic inch of muscular fibre contained eighty-five thousand of this parasite.

A pamphlet was also received containing an article by Dr. Chris. Johnston, of Baltimore, identifying a deposit of earth found on the banks of the Patuxent, in Maryland, as being of the same origin and composition as the well-known Bermuda "tripoli" The microscope at once demonstrated the identify of the two deposits, both being made up of the fossil shells of diatoms, invisible to the naked eye, but here aggregated in such countless numbers as to form extensive tracts of lands. Prepared specimens were also received from Mr. Frank Miller, of New York, and Mr. H. G. Hanks, of San Francisco; for all which a vote of thanks was passed.

The president, Dr. Cutler, read a paper on the "microscopy of the cyclops," and also gave some new and interesting facts regarding certain diatoms found in the same specimen of water. Dr. Cutler states that he has detected in these organisms undoubted *cilia*, by means of which their peculiar and puzzling movements are effected. In this connection an interesting discussion was had as to *how far* motion is to be accepted as undoubted evidence of animal life.

No further business appearing, the society adjourned until the third Thursday in April.

A REPORT ON WIDE-ANGLED OBJECTIVES.

We have had lying in our drawer for two months the report of a committee of the Memphis Microscopical Society, appointed to test the respective merits of wide and narrow-angled objectives as marking lenses, but want of room up to the present time has prevented our publishing it. Even

now, although we would be glad to publish it in full, we can only give the conclusions of the report as made by the chairman, Dr. Cutler.

The objects made use of as tests were striated muscular fibre, p. angulatum, podura and musquito scales, etc. It was the unanimous conclusion of the committee that their investigation had demonstrated that for all classes of work, either by direct or oblique illumination, the low-angled glasses can not successfully compete with properly constructed, wide-angled objectives. They proceeded to state that a one-tenth of 180° (?), which they had the use of, proved its superiority over all other glasses of lower angle.

We will here state that Dr. Carpenter, in the appendix of the fifth edition of his work on the microscope, just published, says that he "has been very glad to learn that the doctrine he has advocated throughout, as to the superior value of objectives of moderate aperture for most purposes of scientific investigation, is now coming to be generally recognized—several makers having recently devoted themselves specially to the construction of such combinations, in which the most perfect correction possible shall be attained, instead of making objectives of small aperture by stopping-down combinations which had been constructed for larger apertures, but were not good enough to bear them."

We presume it will be some time before histologists will yield up their narrow angled glasses, properly made and well corrected, to wide angled lenses, for their ordinary work.

MICRO-PHOTOGRAPHS.

To the Editor of the Cincinnati Medical News.

SIR.—Referring to your announcement under the above caption in NEWS of this month, (p. 190), I beg to say that I am preparing to make photographic enlargements of the finer diatoms, Nobert's test plate, etc.—but *for my individual use and purposes only.*

Numerous letters from Maine to Georgia asking my prices, and how small can these "pictures be made," attest the value of the NEWS as an advertising medium. Unfortunately I have nothing to advertise except the fact that I *do not* make micro-photographs for sale.

I remain, your obedient servant,

Ashtabula, Ohio, April, 1875. J. EDWARDS SMITH.

MEDICAL GLEANINGS.

FORCEPS AS A CAUSE OF LACERATION.—Dr. Wm. Goodell (*State Med. Society*) says: "From our own experience and that which we have seen in the practice of others, we have long been convinced that the forceps is the common cause of most of the severe lacerations of the perineum. Even in comparatively easy cases an instrumental delivery of the head will often occasion an unseen rent in the mucous surface of the vagina which the passage of the shoulders extends through the perineum. Increased observation confirms me in the opinion that, other things being equal, as soon as the

perineum is well distended the forceps should, as a rule, be removed, unless the withdrawal of the blades requires a force which might hasten delivery." Dr. T. Addis Emmet, also, states "that bad laceration of the perineum is the result generally of instrumental delivery." Now that the use of the forceps has become so indiscriminate, it is well to consider these statements of careful and able observers.

Selection of the Proper Leg in Turning.—Dr. Macdonald (*Edinburgh Medical Journal*, July, 1874,) endorses the following observations of Fritsch: "If turning be properly done it matters not whether at the end the child is situated with its back forwards or backwards. If let alone the labor commonly terminates by the back rotating forwards during the passage of the body of the child as a result of the natural mechanism in the small pelvis. It is recommended to seize the nearest foot in all cases and turn as carefully as possible, leaving all attempts to bring the child's dorsum forward to the mechanism of delivery."

Acute Hematuria Treated Successfully by Local Applications.—Dr. E. L. Keyes (*Archiv. Dermatology*, October, 1874) describes a case of unusual interest. A young, robust man was attacked by hematuria. After a long course of general treatment, without avail, a careful examination was made, proving that the source of the blood was the prostatic sinus.

This sinus was cauterized by the application of solid nitrate of silver. In two days the application was renewed. The blood stopped in twenty-four hours. Symptoms of cystitis of the neck came on, but gradually disappeared, and the patient did not again pass blood with his urine.

Enormous Vesical Calculus.—Dr. I. M. Winn (*British Medical Jour.*, April, 11th, 1874) quotes from an old book dated 1623, the following case: The patient was a minister, who lived during the time of Queen Elizabeth and James I. The stone was recognized previous to death, and efforts made to dissolve it. After death the stone was removed from the bladder. "It weighed *thirty-three ounces* and *more*. About the edge it measured *fifteen inches and a half*; about the length, *above thirteen inches*; about the breadth, *almost thirteen inches*. It was of a solid substance to look upon, like flint."

Acidulated Gargles in Typhoid Fever.—M. A. Netter, alluding to the buccal element in typhoid fever, and the beneficial influence of frequently-repeated acidulated gargles, draws the following conclusions:

1. Call the attention of the patient to the bad odor of their mouth, and inform them that not only in it, but also in the nose, there is something being secreted which poisons the whole system.

2. Place at their disposition an unlimited quantity of a solution cotaining two hundred grammes of decoction of barley, thirty grammes of honey, and twenty-five grammes of vinegar. Let them gargle and rinse their mouth with this frequently, and also snuff it into both nostrils. When they have commenced with this, it will be found so agreeable that large quantities will be consumed.

3. The nurses should be instructed to encourage and assist the patients during this operation. Where the adynemia is very profound, the nurses should cleanse the mouth for the patients.—*Gaz. des Hop.* and *Trib. Med.*, No. 308, 1874, G. R. C.

Toothache Drops.—The *Dental Cosmos* for November, 1874, publishes the following formulas:

1. ℞. *Chloroform*, Sydenham's laudanum, aa ʒii; tinct. benzoin, ℥i.

2. ℞ *Creasote*, chloroform, aa ʒii; Sydenham's laudanum, ʒiv; tinct. benzoin, ʒi. 3. ℞. *Oil of peppermint*, rhegalene, chloroform, aa ʒiii; camphor, ʒii. 4. ℞. *Chloral*, camphor, aa ʒi; morphia, gr. ii; oil of peppermint, ʒii

Copaiba in Dropsy.—Dr. Falconer (*Canada Lancet*) feels confident that very few practitioners have given this drug a fair trial in ascites. Passing by cases of cirrhosis and chronic peritonitis, with their accompanying effusions, in which, after re-accumulation after tapping, he has succeeded in not only diminishing, but in completely removing the fluid by the use of copaiba; he refers to a case of ovarian dropsy, which he treated successfully by the drug. Copaiba is the diuretic, *par excellence*, and never fails in removing the serum through the kidneys, except in chronic albuminuria. It obviates the use of eleterium or gamboge, tapping, or ovariotomy, in many cases.—*Medical Examiner.*

Medical Graduates.—The graduates in medicine of the nine universities of Prussia, Germany, are compelled by law to present themselves before a "State Board of Medical Examiners" for examination before they can be licensed to practice medicine in that State. This same law exists, and is rigidly enforced, in the other States of the German Empire; likewise in Austria, France, England, and in nearly all of the other prominent countries of the world, with the exception of the United States of America.

The following table shows the result of the examinations in Prussia during the past year, and conveys also an idea how rigid these examinations are, for about twenty-five per cent. of the candidates were rejected; and we might further add that no candidate is allowed to go up for examination unless he can prove by certificates that hs has attended at least eight courses of medical lectures—equivalent to four years' study:

1873–74.

Universities.	No. of Candidates.	Passed.	Rejected.
Berlin	124	89	35
Bonn	39	33	6
Breslau	37	32	5
Gottingen	34	32	2
Greifswald	81	61	20
Halle	63	49	14
Kiel	21	18	3
Konigsberg	45	25	20
Marburg	33	30	3
Total	477	369	108

The sum total of physicians licensed in the whole German Empire for the year 1874 is only 660.

During the same year the innumerable medical colleges of the United States of America graduated three thousand students.

In conclusion, we add, for comparison, the following table:

1874.

Country.	No. of Inhabitants.	Practitioners licensed in 1874.
Germany	42,000,000	660
United States	40,000,000	3,000

Further comment is unnecessary.—*Canada Lancet.*

LOCAL USE OF TANNIN.—Dr. Miall (*British Medical Journal*, November 7, 1874) gives the following facts from his experience in the local use of tannin: He uses a concentrated solution. It is prepared by adding to one ounce of tannin six drachms of water. The solution is a thick fluid, that keeps well. It is used to convert living skin into leather. For wounds it is a far superior dressing to collodion. If applied by a brush and allowed to dry, it soon forms a pellicle, which excludes the air and gives ease to pain. It may be applied to ulcers, cracked niples, enlarged tonsils, bleeding warts, chronic phlegmonons, erysipelas, polypus of ear, with excellent results.

ACTION OF MERCURY UPON THE BLOOD.—Dr. Wilbouchewitch, of Moscow (*Archiv. de Phisiologie, Bost. Med. Journal*, Dec., 1874), has made a practical application of the ingenious apparatus devised by Mahassez for counting the blood corpuscles. This apparatus briefly consists of a fine capillary class tube of definite capacity, so small as to bear a microscopic examinations with an object glass capable of defining the blood corpuscles. The blood is diluted with artificial serum, placed in the tube, the corpuscles counted. By a simple calculation it is easy to ascertain the number of corpuscles in a given amount of blood.

He found that in the healthy subject the number of blood discs averaged 4,600,000 to the cubic millimetre. In different individuals it varied from four to six millions, but in the same subject the number remained pretty constant.

In syphilitic subjects examined before the beginning of specific treatment, the author found a progressive decrease of blood corpuscles amounting generally to more than 200,000 daily. As soon as mercurial treatment was instituted (of one and two-thirds grains of proto-iodide was begun) the blood corpuscles began to increase in number at the daily rate of about 80,000 during the first week, and then at the rate of 120,oco daily. This increase continued during two or three weeks only. Then the number began to again diminish, so that in a fortnight the number of discs was about the same as at the beginning of treatment. If now the treatment was suspended, the destruction of corpuscles ceased, and in about a week the blood began to grow richer at a daily rate of about 90,000. As a general rule the white corpuscles underwent variations inverse to those of the red corpuscles.

These experiments teach that the administration in syphilis should be intermittent in order that the drug shall not itself act as a destructive agent upon the blood corpuscles.

Correspondence.

*London, England, Feb. 20, 1875.**

DEAR NEWS.—Although "letters from Europe" are becoming something of a monopoly in our American Medical Journals, I venture to add one more to the general stock; not that I have anything specially novel to present, yet there are many interesting facts to be gathered in this great medical centre, which might be utilized if properly arranged and compared with American methods of disposing of the same subjects.

The number of hospitals here, both public and private, is truly astonishing.

* This letter was received too late for the March number of the NEWS, and was crowded out of the April number. It is not injured by delay, however, and will be read with interest.—ED.

Of these five are called royal hospitals, and partake somewhat of the nature of our asylums and the soldiers' home. The endowed hospitals are, Guys', St. Bartholomew's and St Thomas', each containing between six and seven hundred beds. In addition to these there are about thirty main hospitals, that depend entirely on voluntary contribution for their support, and, to judge by the manner in which they are sustained, Londoners are certainly generous to these great charitable institutions. Some of these charities are designed to meet but a single want, while others make no discrimination whatever, except in the matter of the more virulent contagions.

The special hospitals are devoted to the relief of diseases of the chest, the skin, consumption, fever, the eye, deformities, lying-in, the paralytic, etc. and patients are not admitted to their wards except with diseases falling under their several classifications. Beside these there are innumerable private or quack establishments, most of them conducted on the special plan, where a fee is demanded for residence, treatment, etc. The fees in these institutions embrace the entire range of prices, from a mere nominal sum up to that at which a prince might be proud.

Most of the public charities each have their special patron, usually some member of the royal family, or at least one of the nobility. As I am not fully informed as to the precise relations sustained between the patron and the patronized, I take it for granted the patron simply acts the part of what "Mark Twain" would call a "tone imparting committee," as every day the papers contain advertisements soliciting *funds*, naming the banker to which the same may be sent, and winding up with the name and station of the patron. Whether the amount donated to these institutions bears any proportion to the relative rank of their patrons, I am not fully advised, but it doubtless has some influence, as Charing Cross is one of the best sustained, and is regarded as the most aristocratic (if we except St. Georges), and it is under the patronage of her majesty. Her annual subscription is twenty pounds, beside whatever donations she may make—last year she donated £50, the Prince of Wales fifty-one guineas, H. R. H., the Duchess of Cambridge £28, and the Czar of Russia fifty pounds, beside private subscriptions and donations to the amount of over $110,000. When we consider Charing Cross as but one of the twenty-five or thirty like institutions we may form some idea of the vast sums annually expended in London for the relief of the poor.

To students of medicine, especially to those who are devoting their attention to any of the specialities, London offers unlimited advantages. As above mentioned, most of the great city charities are conducted on the special plan, and consequently a greater number of patients, illustrating any given disease or phase of disease, may be here examined than where the general plan is adopted; and it is to this fact alone that London has the honor of producing so many eminent authors. Men are made specialists here whether they will or not, and, other things being equal, the operator who has spent years in the surgical treatment of but a single organ, must become more proficient in dealing with the derangements of that organ than he who, although of equal natural ability, has devoted his life to general practice. Not less plainly is this the case as regards the strictly medical practice. Men who have grown grey in the harness seldom see patients affected with other diseases than those to which they have devoted themselves; and this to a certain extent holds good even with the consulting physicians. These consulting physicians are simply what the name imports, they do not treat diseases themselves except among the nobility and the extreme aristocracy, but are called in critical cases to consult with the general practitioners.

The work here is done almost entirely by the younger members of the profession, and very much of it gratuitously. All the operations I have witnessed, with one exception, have been performed by the assistant surgeons. The full surgeons as a rule are not present. I doubt if Sir James Paget, consulting surgeon to St. Bartholomews, is in the hospital once a month, and the work is performed by the two assistants ranking next below the four full surgeons of the hospital staff. So, in Guys, Sir William Gull has probably not been there since delivering the opening address last October; nor have I been able to catch a glimpse of either of the consulting surgeons—Hilton or Cock. Two of the staff surgeons usually attend, Bryant and Durham, but, as at Bartholomews, the operating is chiefly done by the assistants, Howse and Davies-Colley. The physicians are more attentive—Drs. Habershon, Wilks, Pavy and Moxon, each have their wards, which are visited in person every two days. St. Thomas is incomparably the finest hospital in the city, and so far as I know the only one in which the most obvious sanitary laws have influenced the plan of construction. It is located immediately opposite the houses of Parliament, on the right bank of the Thames, and, aside from the vast superiority in point of architecture, can never be so hemmed in by surrounding buildings, as in the case with the other great endowed schools, or even the public charities. Here I would be pleased to draw a comparison between St. Thomas and the internal arrangements of the Cincinnati Hospital, which it resembles in some particulars exteriorly, and would do so, but so far I have been unable to gain admission to the Cincinnati Hospital. Last January, while on way to this country, I presented myself with my most polite general introduction to the representative of the Superintendent of that institution, but my admission was met by so many dignified objections I left in disgust. Lest I do your Superintendent an unintentional harm, I may state the party to whom I have reference was a saddle colored youth, *at* about eighteen, but who possesses more dignity than any single member of the genus homo it has ever been my good fortune to meet. I hope he is still in office as our country produces too few such as he to permit them to "waste their sweetness on the desert air," and beside that, if our American charities are in future to be conducted on the "European plan," what a Prince of "tone imparters" that lavender shaded youth would make for some needy institution.

The site and buildings of St. Thomas cost the snug little sum of £800,000, or at the present price of gold $4,400,000, but there must have been considerable Tweedism in the contracts, as Londoners inform me more than half that sum could not, judiciously, have been expended in its erection.

The medical classes are unusually large at present. There are eleven schools in operation, with about thirty-four hundred matriculants. Half these are in the three endowed schools, not that the fees are less on account of the endowment, but they have the prestige and popularity, and of course draw the larger classes.

I was particularly surprised at the marked inferiority in physique and physiogonomy these classes presented, compared with those of Jefferson, Bellevue, and the College of Physicians and Surgeons in our own country; yet the system of instruction here is as much superior to ours as our classes are in appearance.

The standard of medical education here is much higher than with us, and is graded from matriculation to graduation. A student must be very respectably educated before he can enter a hospital, and must present a certificate of having passed an examination in mathematics, natural philosophy, chemistry, classics, English grammar, and the outlines of English

history and modern geography. Then there are innumerable side shows that are optional, embracing almost the entire range of human knowledge. After this a residence of four years in the hospitals under the formulas laid down by the royal college of physicians and surgeons, where he must register his studies at the end of each three months, and finally, at the end of the course, passing the rigid examination in whichever branch of the profession the candidate has prepared himself for, entitles him to his degree in that branch *only*. There is not one in twenty here who take a full course in the three great branches of the profession, and only sufficiently qualify themselves in two of them as to be competent to attend to the more common cases, nor can they legally *recover* for services rendered other than those for which they are specially licensed.

The fees for medical instruction are considerably higher than even our eastern colleges. Tuition for the four years, if paid in advance, one hundred guineas, beside dresserships, material, etc., which must at the advertised rates run the amount up another hundred guineas, or about $1200 in our money, and this leaves board, books, instruments, etc., unprovided for. This vast expense and preliminary education is, I am informed, partly for the purpose of rendering the profession more exclusive; that is, exclude the poorer classes from representation in its ranks, and confining it to the sons of the wealthy and the younger scions of the nobility.

This principle of exclusion or rather proscription is equally observable in all the more remunerative walks of life, and must sooner or later end in open rupture between the two great classes; and as England is really growing more democratic every day, notwithstanding present surface indications, it is not difficult to anticipate the result. But having already absorbed more space than I intended, I may state in conclusion that American physicians visiting London will, I am sure, carry home very pleasant recollections of their English cousins, as it seems a pleasure here for the profession to entertain and place every advantage at the disposal of medical visitors.

J. W. Burns, M. D.

CINCINNATI HOSPITAL.

Jones Station, O. April 23, 1875.

Hon. M. B. Hagans, *Member of the Board of Trustees of the Cincinnati Hospital:*

Dear Sir:—During the last year I have repeatedly called the attention of one of your colleagues, (Mr. Mayer), to the injustice done the medical colleges of the city by the policy adopted, and pursued by your board in the management of the Cincinnati Hospital. This policy, perverting as it does one of the organic objects of this institution, can not be defended on any principle of justice, and hence Mr. Mayer's failure to reply to my criticisms.

I do not censure Mr. Mayer for his silence, but I do, and every fair-minded individual must, blame him for his inaction. He admits, as I am informed, the injustice of your discriminating and proscriptive policy, but makes no effort to change it—no effort to place the hospital in a condition to again fulfil the purposes intended in its creation. If you will turn to the organic law of this hospital, you will see that it plainly declares that it was made for the benefit of medical college teachers, and its history for forty years shows that it was so used. This being true, it is a monstrous perver-

sion of the intention of the legislature to assume, as your board has done, that the law of 1861 was intended to exclude college faculties from the staff of the hospital. The sick were cared for under the old arrangement. The complaint came not from them or their friends, but from proscribed medical college teachers, who, on petition, carried the subject to the legislature; and it was through their efforts to a very great extent that the change in the law was procured. It is therefore reasonable to conclude that the law of 1861 was intended to provide a way by which *all* college faculties might have equal facilities in this institution for demonstrating their didactic teaching.

You will please allow me to direct attention to a few items of history made for the hospital by your board since its first organization:

1. The removal of college professors from the hospital staff to give place to persons who expected soon to become such in a new enterprise, the full knowledge of which was probably in the possession of the master spirits of your board at its first organization.

2. The virtual withdrawal of patronage from the hospital by the medical college of Ohio, which has continued until the present time.

3. The insulting position taken and announced by your board, that in your selections for the staff, you were guided by a desire to secure eminent professional attainments.

4. The admission to the staff of members from all the college faculties. Five members were selected from the faculty of the new college above alluded to, three from another, while the third was tacitly told to be satisfied with but one.

5. The acrimonious controversy which resulted in the adoption by your board of the rule excluding and making ineligible to the staff all professors in medical colleges, and also a promise from your board, through Mr. Mayer, your representative, that, from that time, an equal footing of the colleges should be maintained, either by excluding all or admitting a like number from each college faculty.

6. Establishing a dispensary without any provision of law for it; and allowing your staff to charge students for services which the law says shall be rendered without compensation.

7. The repeal of the rule excluding college professors from the staff; and the selection of a college professor from each of two colleges, while the third was refused any representation.

If these items be correct—and I challenge you to disprove them—your board has perverted the intention of the founders of the hospital, and taken advantage of the ambiguity of the language of the law of 1861 to make this institution an instrument for scourging, or blessing, medical colleges, as it may please the love, envy, or malice of a majority of your board.

Look at the perfidy which crops out from the declaration of your board. See how your action has wounded the prosperity of the colleges to enrich the mercenary members of your staff, by allowing them, without any authority of law, to charge college students for hospital instruction. See the kind of justice you meet out, and the death blow you strike at the colleges by your action in compelling the students of a college, which has always patronized the hospital, to be taught clinical medicine and surgery by members of a faculty, which ignores the hospital and refuses to patronize it.

What a sad exposition of the character of some Christian men does the history of the Cincinnati Hospital for the last fourteen years reveal. See them in the meeting-house during the public service, and in the prayer meeting; hear their petitions as they ascend to the throne of the Most High, and listen to their eloquence in the Sunday school while explain-

ing to the children that divine law that "Whatsoever ye would that men should do to you, do ye even so to them;" and then behold them as mirrored in the history of the Cincinnati Hospital.

Verily if your board is a unit on the policy you have pursued in this institution, and Christianity has given you your knowledge of justice as exhibited in the history of the Hospital (which is not the case, however), then is Christianity a delusion, and the Christian Church a fraud.

R. C. S. Reed.

EXPLANATION.

The following letter, which we print precisely as written, was brought to our sanctum by the gentleman whose name is signed to it, with the request that we publish it. We very willingly give place to it.

Mr. Editor

In the April number of your Journal it is stated that I have resigned the position which I have had the honor to hold on the staff of the Cincinnati Hospital and you state further that I have "not felt myself at ease" in my position or that my associations were of a character creditable to myself.

Will you permit me to say that this is quite a mistake? That the position has been to me one of plasure and that my relations with every member of the staff as well as the Board of Trustees have been characterized by harmony and frienship.

I have only resigned because the duties and responsibilities of the situation were incompatible with my private buisness.

Yours Respectfully

W. P. Thornton.

When, in our last issue, we said that Dr. T. did not feel at ease upon the staff, and did not regard the position as creditable, we only stated what he himself gave utterance to not a few times. Over a year ago he resigned, but consented to continue for a short time longer in consequence of no one being found available to fill the place. At that time he was unreserved in his expressions of not feeling at ease upon the staff; and it was generally understood, by all of his friends, that he did not regard the position as creditable.

In regard to the "relations" which existed between him and "every member of the staff," about which we had nothing to say in our editorial, it will astonish a large part of the profession of the city, on reading in his letter, that they were "characterized by harmony and frienship," for a contrary opinion was generally prevalent. May be the best of feeling did exist between him and his colleagues, but the angry and contemptuous expressions often made by a number of them, in regard to him, failed to impress a good many in that way.

"I have *only* resigned because the duties and responsibilities," etc. The duties and responsibilities of the position did not prevent him last winter, against the earnest protest of a number of his colleagues and in the face of the dissatisfaction of the medical colleges, from taking on himself the extra labor of forming a private class among the students, and conducting the members through the wards of the Hospital, charging them five dollars apiece in direct violation of the legislative enactments governing the Hospital, and which brought down a storm of indignation from the Hospital class. His private "buisness," just then, seems to have been forgotton in the "plasure" he was taking in laying up for a rainy day.

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Original Contributions.

CONTRIBUTION TO THE DOCTRINE OF CANCER.

[Continued from April No., p. 159.]

By Dr. HERMAN MEISSNER, of Leipzig.

Extract from Schmidt's Jahrbucher. Translated by J. Trush, M. D.

II. DIAGNOSIS.

The differential diagnosis between cancroid (noli me tangere,) and impetigo rodens ulcerosa and non-ulcerosa is, according to A. Devergie, at times, attended with more than ordinary difficulties.

The cancroid, as a rule, presents to the eye an ulcerated surface upon the common integument, with hard, granular or warty borders, and likewise hardened base. The empetigo rodens ulcerosa also exhibits an ulcerated surface, with hardened borders, but is devoid of the indurated base; the borders in this form of ulcer are very similar to those of a syphilitic ulcer, being undermined, elevated and oval in shape, (not round as in the cancroid) the discharge is sero-purulent, almost destitute of smell, (that of the cancroid sanious and of penetrating cancer odor), the ulcer bleeds readily on the slightest touch (the cancroid not so readily); both affections appear upon the face, the impetigo preferably upon the alæ of the nose and the canthi of the eyelids; the cancroid upon the lips; the impetigo remains often for years confined to a small space, one half to one inch; the cancroid reaches during the first year about double these dimensions; the impetigo occasions, at the most, disagreeable creeping sensations; the cancroid severe lancinating pains; the adjacent integument, in cases of impetigo, is soft and healthy; in cases of cancroid it is found in a healthy condition only at some distance from the sore, the transition from the diseased to the healthy being gradual; the impetigo commences as a fissure, or linear ulceration upon a narrowly circumscribed spot, and not infrequently unites with other similar lesions; the cancroid commences as a larger pustule, located upon a hardened base, and the succeeding ulcer remains isolated. As just remarked the induration in the cancroid disease is present from the beginning; in impetigo rodens, on the other hand, it is observed only after the lapse of years, and even then not throughout the entire border. Two further characteristic items of impetigo rodens are: the very small pustular eruption, and the extension of the ulceration by the periphery, while the center undergoes cicatrization.

Devergie recognizes two varieties of impetigo rodens; first, the impetigo

rodens non-ulcerosa, which in its course resembles acne sebacea, or a vesiculo-papular eruption, the latter especially upon the inner canthus of the eye, and mostly in men (eighty per cent); and second, impetigo rodens ulcerosa, to which females are more liable. A mistake in diagnosis between lupus and impetigo rodens may be avoided by attention to the following points: Lupus is located mostly upon the tip of the nose, or on the upper lip, from which localities the morbid process extends upon the cheeks, rarely does the granular deposit first manifest itself in the center, or outward portion of the cheeks, or upon other regions of the body; the impetigo rodens ulcerosa seizes almost invariably upon the canthi of the eyelids, and the alæ of the nose; in lupus the red and thickened patch merges gradually into the healthy structure, while the impetigo rodens is invariably sharply defined; lupus is found chiefly in lymphatic or scrofulus individuals; the impetigo rodens also, but less frequently; mostly however in cases where the scrofulosis is complicated with hereditary syphilis.

The treatment of impetigo rodens ulcerosa advocated by Mon. Devergie, is, in view of the frequent syphilitic and scrofulous origin of the disease, a double one, the patient requiring for the scrofulosis cod liver oil in conjunction with some preparation of iron, and for the syphilis iodide of potassium and bichloride of mercury with Fowler's solution. Devergie has united the last three remedies after the following formula: Iodide of iron grs. 30; iodide of potassium grs. 150; bichloride of mercury grs. 1½; syrup 18 ozs. In addition to the proper dose of this mixture (a tablespoonful), one drop of Fowler's solution is taken morning and evening, and increased daily by one drop until ten or twelve drops are consumed per day. In the syrup the bichloride of mercury and the arsenic are converted into compounds of iodine, at the expense of a small quantity of iodide of potassium; the patient receives likewise morning and evening one tablespoonful of cod liver oil. If after eight weeks of this kind of treatment the patient shows marked improvement, the dose of the bichloride is reduced to one-twentieth of a grain twice daily, and the arsenic is gradually discontinued; if no improvement is apparent, the treatment is abandoned altogether. A complete cure requires certainly not less than from three to five months, and necessitates mostly also the application of caustics to the indolent tissues. Cauterization alone is usually adequate to cure the non-ulcerating impetigo rodens, and Mon. Devergie recommends for this purpose Conquoin's paste, which need be applied but once, in a layer of suitable thickness; in from fourteen to eighteen days the sore will have healed, leaving a barely perceptible scar. Attention may here be called to the fact that, in preparing Conquoin's paste, the liquid chloride of zinc (not the crystalized salt) is to be employed and made into a suitable paste with pure wheat flour. The erythematous swelling, which manifests itself in the immediate vicinity of the cauterized surface, disappears spontaneously within forty-eight hours after application; the eschar produced is dry, and the resulting cicatrix perfectly smooth. It is also to be remembered that parts covered with crusts are not acted upon by the paste, and further that the cauterized parts must not be touched, or in any way disturbed prior to the natural separation of the eschar.

The differences between epithelioma, or cancroid and benign epidermic, and glandular proliferations on the one hand, and carcinoma on the other, consist, according to Henry Arnott, in the following characteristics:

An epithelial proliferation upon the integument, arising from the epidermis, or from the glandular organs, deserves the name "cancroid" only when it oversteps the bounderies of these tissues, whereas those growths which are limited to such bounderies, no matter how largely devel-

oped, can and should be designated merely as papillomata, or atheromatous cysts. It is in consequence of the penetration of the newly formed cells into the deeper, soft and vascular tissues, that this proliferation assumes a malignant character, because the cell development now proceeds with greatly augmented rapidity, and because cell elements are then more readily taken up by blood-vessels and lympathics and carried to distant parts. Why not all warty and condylomatous formations finally assume a malignant character remains as yet unexplained; the cause certainly does not lie in a specific character of the blood, because in the rare instances where metastatic growths are observed, they are found in the glands and tissues immediately adjacent to the primary development, and the cells have everywhere the same form, pointing therefore to one and the same source of origin.

An explaination of the formation of secondary deposits is found in the greater or less mobility of the parent structure; for while in cancroid of the lips, tongue, genital organs, hand, etc., the lymphatic glandular structures are affected in from fifty to one hundred per cent., these, in the less moveable portions of the face, are involved in about twenty-one per cent. only, and in cancroid of the scrotum and leg not at all. From carcinoma the cancroid is distinguished more especially by the uniformity of its cells; the firm connection of these among themselves, and their well nigh uniform tendency to aggregate into lamellated balls, and also by the less pronounced alveolar development of the stroma of connective tissue. This difference in structure affords a ready explanation of the less malignant character of the cancroid, and its slight tendency to the development of secondary proliferations in distant parts of the body.

In a differential diagnosis of morbid growths the use of the microscope, according to Dr. S. Fleet Speir, is of the utmost importance, especially in the beginning of the development of such growths, the presence of so-called free germs, being looked upon as a reliable index of the malignancy of the neoplasm. Multinucleated, or compound cancer cells are doubtless characteristic of carcinoma, they are however not to be found in all stages and forms of the disease; they are wanting, for instance, in the beginning of the morbid process, whereas free germs may always be found, and are therefore to be looked upon as specific cancer elements. These, according to Speir, are real cells, and to be compared with embryo plastic or connective tissue corpuscles, they being the source of origin of fusiform cells, of fiber cells, of epithelial and other cells.

Now, inasmuch as with this view of the question the embryo plastic cell is the primordial cell of the most varied tissues, it follows that heterology of formation (in the present acceptation of the term) as a sign of malignancy is no longer admissible, because every pathological formation is developed in accordance with a certain physiological type. Speir rather understands by "heterology," a faulty arrangement of the elements composing the tumor; and, under homology, a fault in numerical production, a hypertrophy. Speir at the same time designates as heterologous those tissues which are composed of the greatest possible variety of elements, and as homologous those composed of tissue elements, which are of greatest possible uniformity. According to this reasoning the normal structures would be heterologous, and the cancerous formations homologous in proportion to malignancy, *i. e.*, composed almost entirely of but a single kind of cells; for the more cells deviate from the "multiform" physiological type the more they assume uniform shape and structure, the more they are prone to decay.

Hence not the heterologous condition of a tumor as compared with the surrounding parts, but the homologous structure of the cells, determines

its malignancy; and from this stand point the following four classes of morbid growths may be established: 1. Tumors, heterologous in their elements; may be entirely benign. 2. Tumors, homologous toward other tissues, and heterologous in their own elements; are nearly always benign. 3. Heterologous tumors composed of homologous cells are undoubtedly malignant. 4. Homologous tumors with homologous cells are likewise malignant. The pathological proliferations may further be divided in accordance with malignancy, the tendency to reappearance after extirpation and proneness to necrobiosis, into malignant, semi-malignant and benign tumors, or growths. The cancerous formations in the order of their malignancy, range as follows: encephaloid, scirrhus, epithelioma, enchondroma. The encephaloid appears in two forms only, viz: heterologous toward surrounding tissues, and homologous in its own structure, and homologous in both directions. Scirrhus appears in all the four combinations above defined, viz:

a. Heterologous toward other tissues, and homologous in its own cells; malignant. *b.* Heterologous in both directions, simulating fibroids; semi-malignant, but in all probability becoming fully malignant. *c.* Homologous in the former and heterologous in the latter direction; benign fibroids; may be extirpated without fear of a return. *d.* Homologous in both directions; malignant. The epitheliomata likwise exist under all the four forms just noticed, so also the enchondromata. Even the myomata and osteomata may, in consequence of homologous conversion of their cells, assume a malignant character, and then merit the name of cancer; this, however, occurs much more rarely than is the case with epitheliomata and enchondromata. Any abnormal growth is therefore "malignant" when it exhibits, either a homologous or heterologous condition toward the adjacent parts, but is homologous in its own cell elements; semi-malignant when it is heterologous in both respects and benign, when homologous in regard to other tissues, but heterologous in its own cells. Hence morbid growths, as already remarked, would range as in the following ordor: Malignant; encephaloma and scirrhus; semi-malignant; epithelioma, myoma, and enchondroma; benign; glandular growths, etc., tubercle, and the different forms of hypertrophy.

This ordinal arrangement is applicable to fully developed forms of these morbid productions. In this connection attention must be called to the fact that the form of any of these growths is not fixed, but subject to changes; one form may pass into the other, the semi-malignant may become malignant. The presence of both varieties of the so-called cancer cells—the simple and the compound—in one and the same growth, must not and does not disturb the idea of homology, inasmuch as they are interchangeable, the former being susceptible of conversion into the latter, and the latter into the former, but neither of them capable of a higher grade of development, as transformation into fiber cells, for instance. The simple cancer cell, however, is present in all the carcinomata, whereas the compound cell is found only in a certain proportion of such growths, the former therefore deserves more especially the name of "cancer cell."

Hughes Bennett does not consider the division of morbid growths into benign and malignant as justified, inasmuch as the former may, through cancerous exudation from the vessel (?) be converted into malignant, and the latter, in consequence of fibrous or fatty transformation, may assume a benign character. In support of this theory, *i. e.*, the transformation of benign into malignant growths, several examples are cited by Chaumet. Cancroid of the prepus, after removal of which reproduction and the development of an encephaloid in the inguinal region followed, the case

terminating fatally; wart upon index finger, which, after cauterization, became transformed into a cancerous ulcer, with fungoid degeneration of the bone, leading to development of an encephaloid of the corresponding shoulder, to marasmus and death; an issue (Fontanella?) established upon the arm was transformed into a hypertrophied cancroid, giving rise to degeneration of the bone, liquifaction of the axillary lymphatic glands, and general cachexia, and terminating in death.

[To be continued]

THE MICROSCOPE IN MEDICINE.

By G. W. MOREHOUSE, Esq., Wayland, New York.

It is a lamentable fact that the number of practicing physicians, using the microscope, is extremely limited. In a hundred, ninety-nine are without any practical knowledge of it; and yet it is their duty to understand the causes of abnormal conditions of the human system, that they may be the better able to prescribe the most effective remedial agents. There can now be but little doubt of the general correctness of the theory of evolution, and under this view the careful study of cell growth and development is seen to be of the utmost importance. Every organic being consists mainly of an aggregation of cells, each cell having its individual life history, independent of the life history of the higher being of which it forms a part. With the aid of paleontology, a more or less perfect chain of cellular organisms may be traced all the way from the unicellular infusoria up to the multicellular vertebrata. The differences in species and individual peculiarities result from variations in the growth and differentiation of the cells, caused by external influences of environment, aided by internal inherited tendences, and probably guided by a kind of automatic consciousness or semiconsciousness of their protoplasm, a resultant of the energy of an omnipresent force, the mind of the universe. But, however this may be, the fact remains that each individual is produced from an ovum too small to be examined with the unaided eye. The career of this ovum, as a separate being, is commenced by the advent of spermatozoa, only visible with the microscope. Then begins the process of cell multiplication and growth, which continues until we have the adult man differentiated from a single cell, and during the whole period of his existence these microscopic cells, of which he is mainly composed, are continually forming, dying and being eliminated from the system. Given a marked change from their normal conditions and we have disease.

The point to which I wish to call special attention is this, that the most important processes and changes of the body are going on on a scale too small to be seen with the eye alone; that the microscope only is able to reveal these hidden secrets; and that the physician who does not own one is voluntarily depriving himself of the use of one of his most valuable senses. He closes his eyes at the very moment when every sense ought to be alert.

The cells are to the man what the man is to the state. Good citizens make a good government, and healthy cells make up a healthy individual. We drift farther away from the old idea of the likeness of the body to a machine, and begin to understand it as it is, an unstable growth of cells and "germinal matter," suffused with transient animal juices, just balanced between contending forces and adapted to the temperature, humidity, and electrical and other conditions at present existing on our planet. The time has come when we must not only feel the pulse of the blood coursing

through the arteries, but, if I may be permitted the expression, to feel the pulse of the more important cell changes back of and causing the more obvious symptoms.

It is hardly possible, then, to overestimate the importance of the microscope in the hands of the intelligent physician. It assists him in his diagnosis by giving him the means of ascertaining the true character of morbid products. It gives a clue to the causes of diseased action, by making optically demonstrable the abnormal cell growths. It enables one to detect any foreign irritating bodies, bacteria or other vegetable growth on mucous surfaces by examination of the discharges. It makes possible a successful study of the blood in health and disease. Its usefulness in examination of urinary and other secretions is obvious.

Physicians have almost unbounded facilities for obtaining morbid products for microscopical study. If they could be generally induced to avail themselves of the aid of the microscope, they would at the same time lighten the path-way of others, and secure their own pleasure and prosperity.

HYDROPHOBIA.

Dr. Louis Mackall, Jr., presented the following account of a hydrophobia case to the Medical Society of the District of Columbia:

For several days previous to the 7th of August, 1874, Mr. J. C. S. observed that his hunting dog was behaving in a singular manner—that he was exceedingly fidgety, constantly changing his position, and every now and then snapping at things around him. On the morning of August 7th he seized the house cat, which was passing him, and threw her high in the air, and when she alighted, caught her again. For the first time the dog was now chained. During the day a very bright and intelligent little boy of Mr. S., three years and eleven months old, climbed the fence near where the dog had been chained, and coming within his reach the dog instantly sprang upon the boy, biting him, apparently with but one tooth, in the fleshy part of the leg, posteriorly, just below the right knee. The dog was immediately killed, but nothing was done to the wound of the child, which speedily healed, and but little was said or thought about the matter until a day or two before last Friday, Oct. 9th, when the boy began to complain of pain in his right leg below the knee, which was increased whenever he attempted to move about. Even this did not seriously alarm his parents, who induced the child to walk down the street by promising to purchase him sweetmeats. The body readily consented, but after going a few steps declared his inability to proceed further, and cried pitiously. On the next day, (Oct. 9th,) he was seized about noon with a violent rigor, which continued for a considerable time. He also became very nervous and restless, and these symptoms continued and increased throughout the afternoon and night, so much so that there was complete insomnia the whole night long. The boy could not be prevailed upon to touch a drop of water.

Dr. Mackall first saw the patient at 11 A. M., October 10th. His pulse then small and rapid; no increase of temperature. Extremities quite cool; face pale with an expression of great distress and terror. Eyes prominent and pupils somewhat dilated. He clung to his mother's neck and kept his face averted as if in fear of being examined. The tongue presented a venous appearance and was quite clean, with the exception of several streaks of mucus upon it. The wound was found to be covered with a thin delicate cicatrix, but was free from any evidences of inflammation, the patient however complained of pain on pressure in the popliteal space.

Dr. M. proposed to give the patient a drink of water. This seemed to distress him very much, and he turned away instantly, burying his face in his mother's bosom, and could not be prevailed upon by any coaxing even to look at the glass. After removing the water he seemed somewhat relieved, though still restless, and finally got down from his mother's lap and endeavored to make his way to the bed, a few steps distant. He walked as if the use of his legs was impaired, and had to hold on to the chair.

Three grains of calomel were ordered to be placed dry upon the tongue, and a solution of bromide of potass. every two hours, if it was possible for the parents to administer it.

At 6 P. M. the child was found by Dr. M., at his evening visit, in bed, but very constantly changing his position, although in the bed with him was his stock of candies, in which he still showed some interest. Since morning he had swallowed a number of grapes and had taken the bromide solution regularly, but had not allowed a drop of water to be brought to him, and mention of the subject seemed to produce more distress than in the morning. The bromide was continued during the night, but it did not quiet the patient or induce sleep.

At 10 A. M., next day, symptoms all exaggerated. The expression of terror upon his countenance was painful to witness, and he clung to his father's neck with great tenacity, begging him all the while to change his position and carry him from place to place, at the same time he was constantly talking, though not quite coherently. The mention of water made him shudder, and he immediately turned aside his head and made efforts to get away. His medicine had, however, been taken through the night, and he had even begged that it should be given to him frequently.

Up to this time he could not be induced to take any water, but after great persuasion the Doctor induced him to try to swallow a little. He held out his hands for it in the most nervous and excitable manner, opening his mouth as wide as possible, even before the glass was within reach. As soon as the fluid reached his lips a decided shiver passed over him, and he gulped down the water as if it was choking him. The bromide was now discontinued and five grains of chloral hydrate, every two hours, taken in its stead.

Dr. Mackall was prevented, by indisposition, from again seeing the patient. The Doctor's son, however, made a professional visit in the evening and reported the condition of the child unchanged.

The father of the patient—who seemed to be a very observant and intelligent man—informed the Doctor that the boy continued in the same restless condition, constantly desiring to be moved from place to place, throughout the evening and up to the time of his death. During the night the agony and agitation increased; delirium came on; the boy imagined he was pursued by rats, and made the most piteous appeals to his father to save him. As he begged constantly for the medicine, it was given him quite frequently, and the father thought that it lessened his sufferings. During the evening the patient swallowed some tea and ate part of a custard pie. Whenever anything in the way of food or drink was brought to him—and sometimes even without this circumstance—he would open his mouth as wide as possible, and often, just as the spoon was being carried to his lips, his jaws would snap together, and it would then be sometime before he would make another effort to open his mouth. While it *was* possible for him to take fluid *from a spoon*, any attempt to give it to him *from a glass* always induced a paroxysm.

About half past twelve at night he was seized with vomiting and purging, which continued up to the time of his death, which took place next day at

one o'clock. There were no decided convulsions at the time of death, nor any previous to it except the slight spasmodic paroxysms that occurred during attempts to swallow liquids. Indeed, the father believed the boy to be completely paralyzed before he died. After death there was a considerable discharge of foam from the mouth, although but little saliva had flowed from the mouth during the patient's illness.

The duration of the disease from the time of the rigor was sixty-one hours, and during that time the boy did not obtain a moment's sleep.

Dr. M. considered that death was evidently due, not to asphixia, but to asthenia. The case was, undoubtedly, one of hydrophobia.

Dr. J. F. Thompson inquired whether Dr. Mackhall had examined the mouth and tongue of the patient for the peculiar vesicles said to exist in cases of hydrophobia.

Dr. Mackhall. Yes, but did not expect to find them. He first saw the patient after the stage of incubation had passed, and these vesicles, if found at all, were to be seen only during the incubation stage, and never later than the twenty-second day after infection.

Dr. J. F. Thompson. The presence of these vesicles was an important item in the treatment of this disease. Remembered a case in which a gentleman had been bitten by a rabid dog, "out west," and came home to Washington to die. The Doctor watched for several weeks for the appearance of the vesicles. They did not appear, and the patient has so far escaped the disease. The importance of these vesicles lay in the consequent proposed mode of treatment, for cases of cure had been reported in which the vesicles had been cauterized with iron at white heat. It had been stated that the presence of the vesicles was constant, and that cauterization would cure the disease.

Dr. Mackall. The Doctor was correct in saying that cauterization of the vesicles had been claimed as curing the disease, but he would find, by referring to Trousseau, that the vesicles were to be looked for on the sixth, eleventh, and twentieth days, and never after the twenty-second day. Trousseau also said that we need not expect to find them except during the stage of incubation.

Dr. A. F. A. King. What number of days had elapsed in Dr. Mackall's case between the bite and the appearance of the disease?

Dr. Mackall. According to the parents it would have been nine weeks on the day when the patient was seen by Dr. M. The patient had had a chill on the previous day. The case, although not a typical one, was interesting; no doubt existed as to the diagnosis. The father, an intelligent man, gave the history as well and completely as could be done. The child did not die of asphixia, the usual mode of death in hydrophobia, but of asthenia. Although he abhorred water, he took fluids, which was unlike the majority of cases, for Trousseau stated that great difficulty existed in making the patients swallow fluids of any kind. This patient took large quantities of tea; but when water was offered, would open and shut his mouth spasmodically; when the water reached the pharynx, he would gulp it down hurriedly. Upon attempting to place him in a mustard foot bath, he screamed violently; finally by putting a little water on his knees and hands, he submitted to be placed in the bath. The potassic bromide and chloral hydrate were given dissolved in water. Did not know whether the boy had passed his urine. Would ask if any of the members of the Society were familiar with the results of Dr. Hammond's autopsies in cases of hydrophobia, published in the New York dailies. Dr. M. was not certain where Dr. H. located the disease, but believed that he claimed to have found in the medulla oblongata, near the origin of the 9th nerve, evidence of effusion

of blood—little hemorrhagic spots. Dr. Mackall's recollection was not clear upon this point, and he hoped some one present would be able to give more accurate data.

Dr. King. Had inquired as to the child's urinary function because he desired to know whether the sensation of flowing urine would bring on the hydrophobic symptoms. It was remarkable that the disease should be accompanied by this dread of water; and he would suggest that we might perhaps supply this important fluid to the system by injections into the bowels, which might be done without the patient's knowledge. Thought we might thus possibly prolong life and get the blood into a more normal condition. Would ask Dr. Woodward for information in regard to the microscopical characters of the blood in this disease.

Dr. Woodward. Believed that in looking for new points in this disease, we had neglected to search the more valuable records of older authors. Virchow in his "Zoomoses," (Special Path. and Therap., 1856,) traced back the subject of hydrophobia for centuries. The modern microscopic accounts were of such a conflicting character, that he preferred not to give an opinion upon them.

Dr. J. E. Morgan. Had any one ever seen or heard of a case of recovery? He had not. Could not see how Dr. King's plan of injecting water would benefit the patients, for they all died, and by prolonging their lives we simply prolonged their sufferings. Had seen but one case in his practice, and this suggested the question as to the origin of hydrophobia—as to whether *any* rabid animal could communicate the disease. His case (of a lady) originated from the bite of a rat. Recent authorities stated that it could be produced by the bite of any animal, or even man.

Dr. Mackall. Van Swieten reported a case cured by turpeth mineral. Euripides was said to have been cured by being pitched into the sea. Trousseau recommended the turpeth mineral, and his translator advised tracheotomy to prevent death from asphexia from spasm of the glottis. Chinese physicians used musk and cinnabar.

Dr. Busey. Dr. Jackson reported, in the Am. Journal of Med. Science a case cured by chloroform. (Vol. xvii. p. 294.)

Dr. J. F. Thompson. Did not know of any cases being cured, after the development of the disease. The important point was to look after the vesicles. It was too common not to give instruction on this point to persons who had been bitten by rabid animals. They ought to be watched for months, and if the vesicles were found, cauterization held out the only hope.

Dr. C. E. Hagner. Would ask Dr. Thompson what he, as a surgeon, would reccommend upon first seeing a case of recent dog-bite?

Dr. J. E. Thompson. If there was suspicion of rabies, he would at once apply a ligature to the limb above the bite, then cut out the entire wound, promote bleeding by cupping glasses, and finish by cauterizing the wound with nitrate of silver. As yet it was a doubtful point whether the poison was absorbed at once, or remained dormant in the vicinity of the bite, until the disease made its appearance.

Dr. Busey. If it produced the vesicles it must be absorbed.

Dr. Eliot. Would Dr. Thompson remove the cicatrix after the disease had made its appearance?

Dr. Thompson. Yes

Dr. Mackall. Did not think Dr. Thompson went far enough in his treatment. Let a dog stick a whole tooth into the flesh, to the extent, say, of one inch and a half, and the wound could neither be cauterized successfully, nor could it be cut out. If he, Dr. M., or any of his family, were bitten by a rabid dog, nothing short of amputation would satisfy him. He would be willing to loose a limb in order to escape hydrophobia.

Dr. J. F. Thompson. The question of amputation was an interesting one, but the fact was that the majority of persons bitten by dogs known to be rabid, never suffered from hydrophobia. It was rather risky to cut off a limb on an uncertainty. The case he had mentioned had been bitten by a dog which died of rabies, still the man never had a symptom of the disease. The virus in many cases was wiped off by the clothing, and never entered the flesh. Maintained that the plan he had recommended was sufficient.

Dr. Reyburn. Had never seen a case of hydrophobia, but remembered an instance in his own family occurring about twenty-seven years ago. His stepfather was bitten by a rabid dog in four places. Dr. Mutter excised the parts and cauterized the wounds. The patient escaped the disease, but was alarmed for months afterwards. Thought patients would hardly submit to amputation. Youatt was bitten twenty-two times, and saved himself by cauterization with nitrate of silver.

Dr. Mackall. And died of hydrophobia!

Dr. Reyburn. Yes, he finally died of it. It would hardly have done in his case to take off a limb every time he was bitten.

Dr A. F. A. King. It was impossible to tell whether a man bitten by a rabid dog would have hydrophobia; even if we could, it was still questionable whether amputation would save the patient. It took some time to get ready for an amputation, and if it was true that the poison was absorbed, we would be too late, for hydrocyanic acid could be detected in the brain in forty seconds after its administration, and morphia injected hypodermically would sometimes show its effect almost before we remove the needle from the skin. It was a question whether excision could remove all of the poison.

Dr. Mackall. The accepted theory was not in accord with Dr. King's views. The present theory was that the poison remained for some time at the seat of deposit, and was thence propagated to the nerve centres. This was Brown-Sequard's view, and Hammond's post mortems seemed to confirm it, for the latter found small deposits in the medulla oblongata.

Dr. J. F. Thompson. Dr. King's idea would exclude all local treatment, for according to it no physician could be called soon enough. The question, however, was of interest. The doctor could not cite a case of poison being introduced into the system without its showing some immediate symptoms, ex. gr., in rattlesnake poisoning the symptoms appeared at once. It was impossible to form a correct opinion upon this question at present. According to modern views the virus of vaccine and of syphilis was absorbed immediately. Others still held that vaccine was not absorbed until after the point of insertion was inflamed; he believed that the theory of its immediate absorption was the more correct one. According to modern views the poison of hard chancre entered at once, and the resulting chancre was only a manifestation of the infection Hydrophobia might have a period of incubation, but at the same time it was more prudent to take the other view and excise the bitten part.

Dr. J. E. Morgan. Dr. Smith, of Baltimore, contended that when the animal poison was removed by the knife or destroyed by cautery, the patient was safe, and in support of this view cited the fact, that if the vaccine pustule was rubbed or scratched, vaccination failed; or if the puncture was cauterized or excised twelve hours after vaccinnation, it also failed to infect the system. If an animal poison took a certain interval of time to enter the system after being introduced by puncture or laceration, it was our duty to remove it. For this purpose he preferred the caustic potash; objected to cutting around the part because the virus was apt to touch the newly cut surface. He also recommended the white hot iron. These were Dr. N. R. Smith's views.

Dr. Lincoln. Had read Dr. Smith's article and agreed that we had nothing better than caustic potash in these cases: it destroyed everything, and we could carry it everywhere. Youatt trusted to nitrate of silver, but it was too feeble. We destroyed more tissue with the knife than with the caustic potash, and without better results.

Dr. J. F. Thompson. Had no objection to the potash, but thought when the knife could be used it was superior to the caustic. Had laid stress upon constricting the limb above the seat of injury. By incising we produced bleeding, which should be encouraged by warm water and cupping. The potash would destroy as far as it went, but with the knife we obtained the advantage of hemorrhage. These rapid poisons entered directly into the venous circulation, and by constricting the veins and excising the parts, we did all that surgery could accomplish. The caustic might be used where we could not safely employ the knife.

Dr. Lincoln. If the poison entered the venous system, we would have no use for either knife or potash. If the poison remained near the point of entrance, the potash would destroy it. Had often been called upon to apply caustic potash to dog bites, and had never been disappointed with the results. Youatt succeeded twenty-two times in his own person with a much more feeble agent, argent. nit.

LACERATED WOUND OF MEMBRANA TYMPANI.

By W. R. Amick, M. D., Cincinnati, Ohio.

Mary E., æt 13, colored, has always been a healthy child, and never had any aural trouble. On April 10th, while in company with some other children, playing in the street, she found an old pin that had become rusty from exposure to the weather. With this she began to pick in her right ear, but instead of taking the pin by the point and passing the rounded head into the ear, as most persons do who use pins for removing the cerumen, she reversed the order, and taking the pin by the head she inserted about two thirds of its length into the meatus and began picking in her ear. Just at this time one of the children running around and playing, struck forcibly against her elbow causing the pin to be thrust inward into the membrana tympani, producing violent pain for a short time. Half an hour later the pain assumed a dull or aching nature, with occasional paroxysms, in which the pain would dart inward, starting from the wound. Patient complained of some tinnitus aurium or ringing in the ear. By testing with the watch the hearing distance in the right ear was found to be 2-48, that is, the ticking of a watch which should be heard at a distance of forty-eight inches, was heard at a distance of only two inches from the ear. With the left ear the patient could hear the watch at a distance of forty-eight inches, or 48-48, being normal. Some watches tick louder than others, and therefore can be heard much farther. The patient stated that the pin was still in her ear, which on inspection proved to be a mistake.

On examination with mirror and aural speculum some blood could be seen mixed with the cerumen in the ear, but on account of the cerumen nothing definite could be ascertained. The ear was then carefully syringed with tepid water, but owing to the dry and hardened condition of the wax, it was not dissolved or loosened sufficiently to be washed out by the force of the water current. I did not think it proper therefore under the circumstances to remove it with instruments, or by any forcible means, for I was satisfied that the point of the pin had penetrated the membrane, and if the

membrane was lacerated it would be weakened. Besides, force is not justifiable in these cases, and sometimes irreparable injury is done by using forceps, probes, picks and curettes, and other sharp pointed instruments.

As I have used atropine to relieve the pain in a few cases of inflammation of the middle ear, with some success, I concluded to try the effect of it in this case, but as the pain had been gradually subsiding, it was not a proper case in which to test the medicine. The solution used was atropia sulph. gr. ij; add aq. dist. ℥ ss.—M. Sig. three to five drops in the ear whenever there was much pain. A solution of soda bicarb. gr. xv, add aq. dist. ℥ss was also given, and a few drops of this was to be put into the ear five or six times a day to soften the cerumen. It is better to have the solution a little warm before putting it into the ear. Two days later the watch was heard at a distance of six inches from the ear. After the ear had been thoroughly syringed with tepid water and considerable cerumen washed out, the hearing distance became 12-48.

An examination found a small irregular lacerated wound about a line in length, situated in the anterior portion of the posterior inferior quadrant of the membrane. The membrane appeared to be slightly congested, but that may have been due either to the syringing or from the cerumen having been in contact with it. If it was due to the latter course in all probability the congestion would have terminated in ulceration and perforation of the membrana tympani, and then inflammation of the middle ear, had not the cerumen been removed.

In cases of rupture of the membrane by concussion, or as the result of a blow, it is thought by some not best to use the syringe, but let rest and nature do the work. If there should be much pain an anodyne should be administered. In this case we are not dealing with a rupture but a wound, and therefore expect a better result. The chief reason for using the syringe was to clear the canal leading to the drum, in order that we might be able to see the nature of the trouble with which we had to deal. The patient did not complain of any pain at this time, nor of any tinnitus aurium. A week after the injury was received the patient did not have any unpleasant symptoms, the hearing distance being 18-48. The wound had united and there was less congestion of the sorrounding parts than at first. Since that time the patient has failed to present herself, but in all probability she will hear in a short time nearly as well with the right as with the left ear.

SALICYLIC ACID.—ITS PROPERTIES AND ACTION.

From Schmidt's Jahrbucher, March, 1875. Translated by J. Trush, M. D.

Professor Neubauer, of Wiesbaden, after referring to the important communication of Professor Kolbe, respecting the antifermentive properties of salicylic acid, discusses the influence of this substance on wine-yeast. He remarked that in carbolic acid we certainly possessed an excellent agent to arrest fermentation, and prevent the development of fungous growths, but that its disagreeable odor and taste, as well as its poisonous properties, would of necessity forbid its employment in the manufacture of fermented liquors. The salicylic acid on the other hand being absolutely devoid of odor, in dilute solution well nigh tasteless, and altogether free from poisonous properties, would be suited for this purpose, if found effective. To determine this point, Professor Neubauer instituted a series of experiments, employing throughout the chemically pure salicylic acid. The primary object being to solve the question, how to prevent secondary fermentation

of wines, and the development of mold in casks and barrels, an item of greatest importance in the manufacture of wines. The unequivocal result of these experiments was to the effect that, a given amount of salicylic acid would destroy the vitality of a certain quantity of yeast but no more. Thus it was found that a very small percentage of salicylic acid would materially retard the growth and multiplication of the yeast plant, but for its complete annihilation a greater quantity of the acid was necessary, an amount proportionate to the quantity of torula cells present. Experiments showed that the vitality of 98 gram., dry weight, of the yeast plant, diffused through 1000 liters of cider, is completely destroyed by 100 gram. of salicylic acid. So far no reliable data, respecting the dry weight of yeast cells contained in one thousand liters of grape juice, are at hand, but Professor Neubauer very much doubts that the proportion is so great as 98 gram. per 1000 liters of juice, so that 100 gram. of salicylic acid (perhaps considerably less) per 1000 liters of grape juice would suffice to arrest fermentation completely.

In order to study the effects of salicylic acid on mold, Professor Neubauer prepared three vessels, each containing fifty cubic centimetres of pure, filtered cider, as follows: to vessels No. 1 and No. 2, he added a liberal quantity of spores of the common mold, the penicillium glaucum, but none to vessel No. 3, this remaining uncontaminated. He next dissolved in each of vessels No. 2 and 3 gram. 0.0028 of salicylic acid, vessel No. 1 receiving no acid. Three days later he found the surface of specimen No. 1 covered with a complete layer of mold, which by the end of the second week was quite massive and of a greenish color. Specimen No. 2, containing spores of the mold and salicylic acid, was at that time—two weeks after preparation—entirely clear, the spores having undergone no development, but were lying poisoned upon the surface of the liquid. Specimen No. 3, containing salicylic acid only, was exposed, during this time to the open air, in the immediate vicinity of luxuriantly growing mold. The contents of this vessel also were entirely clear, of normal taste, and free from all traces of mold.

In regard to care and management of wines, Professor Neubauer suggests that rinsing of casks and barrels with a dilute solution of salicylic acid, would effectually prevent the formation of mold upon the inner surface of these vessels. The annoying cloudiness of wines, likewise, which is so apt to occur as the result of secondary fermentation, and which cloudiness can only be removed by filtration and the tedious process of fining, would disappear, or could be prevented by the addition of a small amount of salicylic acid, and young wines thus treated would be much earlier ready for bottling. Finally, we might reasonably hope to be able to prevent, by a proper use of this substance, all those scourges to wine culture which depend for their existence chiefly upon the growth of the various forms of mold. As "wine doctoring," the addition of a minimum quantity of salicylic acid could not justly be characterized, inasmuch as the employment of this substance, a chemically pure body, devoid of injurious properties, is unquestionably preferable to the sulphur fumigations, and the clarifying by means of blood, albumen, gelatine, glue, etc., now so much in vogue.

Professor Kolbe, in a further communication respecting the properties of salicylic acid, calls attention to the interesting fact that the two acids, the paraoxybenzoic and oxybenzoic, which are isomeric with salicylic acid, do not possess the properties of the latter, they neither preventing the formation of mold upon beer, nor the fermentation of saccharine juices. Prof. K. goes on to say that it was somewhat surprising, and at present inexplicable, why the paraoxybenzoic acid although identical in chemical com-

position with salicylic acid, and, like this, convertible by rapid heating into carbolic acid and carbonic acid gas, and which under very nearly the same conditions could also be obtained from these two compounds, why this substance should nevertheless be devoid of all antifermentive and antiseptic properties, properties which it had been shown the salicylic acid possessed in so marked a degree.

No less surprising perhaps is another experimentally demonstrated fact, viz: that it is only the free salicylic acid which manifests an antiseptic influence, and that watery solutions of its neutral salts are altogether inert.

The salicylate of soda, for instance, neither preventing nor retarding in the least either the growth of mold upon beer, or the acid fermentation of milk, or alcoholic fermentation of saccharine juices, and this too notwithstanding the proportion of the acid in the quantity of the salt employed was more than double the amount of free acid which, in watery solution, would have been necessary for this purpose.

In regard to the question how these properties of salicylic acid could be practically utilized, Professor Kolbe mentions among other items the preservation of drinking water by means of this substance, he having demonstrated, that the addition to such water, of a very small percentage of salicylic acid, would keep it sweet and pure for a considerable period of time. The experiments made in reference to this point were these: Several new barrels were filled with water from the Leipzic waterworks, and placed in a warm room; salicylic acid, in varying quantity—not exceeeding 1 gram. to 200,000 gram. of water—was then introduced into a number of the barrels, while some were left without acid. After the lapse of four weeks it was found that the water in those barrels containing no salicylic acid had already a disagreeable after-taste, while that from barrels containing a minimum quantity of the acid was perfectly sweet and of normal taste.

As a medicinal agent, as well as a toilet article, salicylic acid has already found numerous application. Prof. K., for instance, uses a tooth powder and a lotion containing salicylic acid for cleansing and purifying the teeth and mouth. The "bad breath" with which many persons are permanently afflicted can be effectually suppressed, *i. e.*, deprived of its offensive odors, by the use of a mouth wash of this kind. Salicylic acid is likewise an excellent remedy for destroying the disagreeable smell emanating from sweating feet, it preventing the formation of butyric, valerianic and kindred acids, which are the main source of these odors, without arresting the sweating itself. A powder composed of salicylic acid, powdered soap and starch, has been prepared by a prominent druggist of Leipzic, and sold quite extensively; it is considered especially useful to travelers and to soldiers on the march as an ingredient of the foot bath, etc.

The numerous trials which have been made by Professor Thiersch, of Leipzic, respecting the applicability of salicylic acid to surgical purposes have, according to report, given satisfactory results. In obstetrical practice also like salutary effects have been observed from the use of this agent. Since July, 1874, salicylic acid has been employed at the gynæcological clinic of Leipzic to the entire exclusion of carbolic acid, being used to disinfect the hands and instruments; as an ingredient of vaginal douches; as an application to puerperal ulcers, etc. Aqueous solutions and powders are the forms in which the acid is generally employed, viz: watery solutions of a strength ranging from one part of acid in 900 parts water, to one part acid in 300 parts water, a small quantity of alcohol being occasionally added; and powders composed of one part of the acid to five parts of starch.

Salicylic acid, by reason of its antiseptic properties, promises also to

become a useful internal remedy in all so-called "blood diseases," especially those occasioned by contagious poisons. The doubts entertained by many physicians that salicylic acid, because of its rapid absorption and speedy elimination, would exert the anticipated effects in the blood, Prof. Kolbe believes to be altogether without foundation. The more rapidly the acid, introduced into the stomach, is absorbed and enters the circulation, the sooner it is brought in contact with the disease-producing poison, and the more favorable, obviously, are the conditions for speedy and permanent destruction of the deleterious principles; all that is necessary to secure continuous action of the remedy in the blood is to administer appropriate doses at comparatively short intervals.

To ascertain the action of salicylic acid when administered internally, and also to determine the range of the medicinal dose of this drug, Prof. Kolbe made numerous trials with it, both upon himself and upon others. He himself took half a gramme daily for several successive days, without perceiving the slightest unpleasant effects. After suspending the use of the remedy for eight days, he again took of it, for five days in succession, one gramme per day, and then for two days more, one and a half grammes per day. Under the use of these larger doses likewise the functions of digestion remained entirely normal, the urine was clear and devoid of any unusual smell, but affording at all times the characteristic salicylic acid reaction on the addition of the tincture of the chloride of iron. No salicylic acid was at any time found in the feces. The medicine, in all these experiments, was taken in the form of watery solution—one part of the acid to one thousand parts of water—and in divided doses. Prof. Kolbe next, in conjunction with eight of his students and assistants, took salicylic acid for two days in succession, each person taking one gramme the first day, and one and and one fourth grammes the second day. The party thus consuming together fully twenty grammes of salicylic acid, yet no disturbances whatsoever of any of the bodily functions were observed by anyone of the nine experimenters. The assumption is therefore justified, that salicylic acid in doses of from one to one and a half gramme per day does not, to any perceptible degree, derange the system.

In reference to the form in which salicylic acid is most appropriately administered, Prof. Kolbe remarks that the powdered acid, stirred up perhaps in a little water, is objectionable, inasmuch as in this form it produces a very slight caustic effect on the mucous membrane of the mouth and stomach; that consequently the watery solution, with or without the addition of a small quantity of alcohol to augment the solvent power of the menstruum, is the only suitable form for internal administration.

In order to determine whether salicylic acid in watery solution would be absorbed by the unbroken integument, Prof. K. took a bath composed of 250 grammes of salicylic acid to 250 kilogrammes of water, at a temperature of 93° F; in this bath he remained for ten minutes. No perceptible effect was produced on the skin, except that the tips of the fingers presented a slightly shriveled appearance. After the bath, which was taken at ten A. M., the urine was repeatedly tested during the day for salicylic acid, but invariably with negative results. It would appear, therefore, that salicylic acid in watery solution is not absorbed through the unbroken epidermis.

Prof K. intends to continue his experiments on this subject, especially those having for their aim the elucidation of the physiological action of salicylic acid. In conjunction with another physician, Prof. K. intends to study the influence of this agent on vaccination, *i. e.*, whether children, while taking the remedy, can be successfully vaccinated or not. Should it turn out that vaccine lymph brought under the epidermis of such children

is without effect, while upon others, not under the influence of this agent, it produces the well known results, the inference might justly be drawn that salicylic acid introduced into the circulation would likewise destroy the potency of other zymotic and disease-producing poisons.

Selections.

CROUP AND DIPHTHERIA.

Dr. J. C. Faget (*New Orleans Medical and Surgical Journal*, March 1875) in an extended discussion of the above diseases, develops the following points:

1. There is but one specific diphtheritic affection, true croup and diphtheria being the same disease.
2. Epidemics are quite changeable, and always contagious.
3. The first individual manifestations are, as a rule, local, and most frequently in the pharynx or the tonsils.
4. Local treatment at the outset is of urgent neccessity, and all difficulty or repugnance must be overcome, in order to destroy the disease *loco dolenti.*
5. When general poisoning has taken place the treatment can only apply to the symptoms, as there is no known specific antidote to the disease.
6. Tracheotomy is only an ultimate resource, and yet of great importance.
7. Tracheotomy in extremes is a sad duty, and yet must be performed.
8. From 1820 to 1845 the operation was performed late, and death was the rule. From 1845 to 1870 the operation was performed as early as possible, and half the cases recovered.

Diphtheria as Observed in Italy.—The following conclusions were reached by various physicians of Milan, after a careful review of their experience during a late epidemic (*Medical Times and Gazette—Medical and Surgical Reporter*, January 9, 1875):

1. The disease is transmissible and contagious.
2. The disease, unchanged in its characteristic features, becomes alike developed and prevails at all seasons, and in all climates; in localities that are dry, with pure air, as in those that are humid and poisoned by mephitic and palustral miasmata.
3. Though not exclusively confined to any epoch of life, it has a predilection for early age, viz, ten years to infancy.
4. There is no difference between the sexes respecting their liability to the disease, or their mortality when attacked.
5. The mortality is largest below five years of age, and goes on decreasing with age and the decreasing numbers of those attacked.
6. The disease equally attacks the poor and those in easy circumstances, though fewer die among the latter.
7. When one of a family of children is attacked, the others in the same house are nearly all successively attacked.
8. Although the disease has in many cases presented itself to practitioners with the symptoms of the angina developed, and in others the primary symptoms, owing to their mildness or to the ignorance of parents, have been overlooked, yet in most cases symptoms of general disturbance have been recognized, and have preceded by twenty-four hours, or even by four days, the appearance of the diphtheritic deposit.

9. Death was usually rapid, in most cases not later than the third day, and accompanied by symptoms of carbonic poisoning. Some died on the seventh, tenth, or even the twenty-eighth day, with symptoms of albuminous nephritis, paralysis, etc.

10. The mean duration of the disease in the cases which recovered was from ten to fifteen days. In a few cases, attended with pneumonia, months sometimes elapsed ere the cure was complete.

11. No curative treatment was discovered.

12. The measures most relied on are prophylactic, private and public hygiene.

ON OPIUM POISONING.

Stated Meeting of the New York Medical and Library Journal Association, April, 23, 1875.

Dr. E. R. Peaslee, President, in the Chair.

The paper read by Dr. Andrew H. Smith upon this subject was confined chiefly to the consideration of the effects of the drug, which shorten the life of the patient or cause solicitude to the practitioner. In some cases the symptoms of themselves are insufficient to make an absolute diagnosis, yet they are generally so distinctly marked and peculiar that, with the history, if that can be obtained, they leave but little room for error in this direction. The first effect of the drug is to produce more or less stimulation or excitement, which is followed by giddiness and a sense of oppression, and soon by extreme drowsiness. At this stage nausea and vomiting may occur. If the patient is permitted to sleep, it deepens into a profound unconsciousness, the lips and face become more or less cyanosed, the breathing becomes stertorous—in short, the patient falls into a condition indicating the advanced stages of opium poisoning. The pulse, which at first may have been bounding, now becomes slow and full, but later on small, feeble, and thready. The pupils become closely contracted and insensible to light, deglutition ceases, mucus accumulates in the air-passages, and death takes place from asphyxia. Convulsions may occur, especially in children. The intellect is usually almost completely overpowered.

One of the most constant symptoms is contraction of the pupil, and this is due to the effect of the drug upon the nerve centres which govern its movements.

This symptom is of great value. The contraction is usually symmetrical, and in this respect differs from that induced by irritation of the membranes of the brain, in which case the pupil seldom contracts equally. It sometimes happens, however, that the pupil contracts unequally in opium poisoning, so this symptom should not be relied upon too absolutely in making out a diagnosis, and should not be accepted as diagnostic unless there are other symptoms to sustain it. It is to be borne in mind that in the last stage the pupils generally become widely dilated.

The respiration usually diminishes in frequency. The general opinion is that opium destroys life by interfering with this function, and it is the effect which the drug has upon the respiration that has been held as a criterion in deciding whether danger is present or not while administering opium in the treatment of disease, especially peritonitis. The rule has been established by Prof. Alonzo Clark, and has been followed by the profession in general, that the opium is to be continued until the respirations are brought

down to twelve to the minute, unless the important symptoms of the case are relieved before this point is reached; but when this point is reached in any case the remedy is to be discontinued, except in such doses as are just sufficient to hold the respiration.

It must be borne in mind, however, and this is a point of great importance, that the most dangerous narcotism may be present while respiration is going on at or near the normal rate. The fact that such cases can occur renders it absolutely necessary not to rely upon the respiration alone as a criterion to guide us in the administration of the drug.

The contraction of the pupil and the general condition of the patient should serve to place the practitioner upon his guard, although the respiration may be only slightly affected. The changes which occur in the pulse are more tardy in making their appearance than are the corresponding changes in respiration. *Post-mortem* appearances after opium poisoning are almost negative. If the opium has been taken in a liquid form there are seldom any traces of it to be found, but if taken in a solid form the opium itself may be seen. The alcohol in laudanum, if that is the preparation used, may cause some hyperæmia of the mucous membrane of the stomach. The lungs are sometimes found engorged, as well as the right side of the heart.

Extravasations of blood in the brain are rare. There are no specific lesions left by opium poisoning.

Diagnosis of opium poisoning from *apoplexy* is sometimes difficult, especially in those cases in which the patient is found in a comatose condition, and no history can be obtained. In a large proportion of cases the two conditions may be distinguished by means of the following symptoms: In apoplexy the pupils are rarely contracted equally; in opium poisoning almost always contracted equally. In apoplexy there is no possibility of arousing the patient, but you can usually induce reflex movements. In opium poisoning the patient can generally be aroused for a moment, but reflex movements cannot ordinarily be induced. In apoplexy, if the patient is carefully watched, and any movements occur, it will be seen that they are restricted to one side of the body; and if no movements are made, there is present a condition of relaxation affecting one side, which can generally be easily recognized.

In apoplexy the breathing is commonly stertorous, while in opium poisoning it is rarely stertorous. In apoplexy pulsation in the carotids can be seen, while in poisoning from opium these are not observed. These are the more prominent symptoms by which the two conditions can be distinguished. In many cases the opium can be detected in the breath.

Uræmic coma sometimes makes its appearance without preceding dropsy, and may look like opium poisoning; but it lacks the characteristic pupil, and the urine will be found to contain albumen or casts, or both.

Alcoholic intoxication is a condition that must be separated from opium poisoning. In this case the pupils are not contracted, and the alcohol can generally be recognized in the breath. The drunken man, when aroused, begins to babble incoherently, while the man suffering from opium poisoning at once lapses into his sleep again. The two conditions may be associated, and then it becomes a case difficult of diagnosis. Prognosis is extremely favorable if treatment is properly employed. He had rescued one patient in whom the respirations went as low as one in two minutes. Patients have been restored who have taken five, six, and eight ounces of laudanum. While there is any sign of life efforts at resuscitation should not be relaxed. Opium is seldom administered with felonious intent. It could scarcely be given without the knowledge of the person on account

of its bitter taste, and its effects are so obvious that the fact would be at once recognized by the victim himself. A person in severe pain, or laboring under great cerebral excitement, will bear a much larger amount of the drug, than when the system is in its normal condition; but when the pain and wakefulness are overcome, the system is deprived of the protection thus afforded, and now, if more of the drug is given, alarming and perhaps fatal narcosis may be induced. It is in this way that the sudden narcotism is to be explained which occasionally supervenes when only doses of ordinary size are continued that have previously been tolerated without the development of any alarming symptoms. The system has lost its power of protection, and succumbs rapidly.

The treatment of opium poisoning consists in the evacuation of the stomach, the administration of such drugs as are supposed to have the power of modifying the effect of the poison, and the use of various agents to arouse the nervous system, the respiration, the circulation, and the temperature.

As emetics, mustard, alum, sulphate of zinc, and sulphate of copper may be used. Tartar emetic should never be employed, and ipecac is too slow. When a considerable degree of nausea exists sudden pressure upon the epigastrium may induce vomiting. Emetics are apt to fail when the narcotism is extreme, and then the stomach-pump may be used. In absence of this instrument a piece of ordinary india-rubber tubing may be used, after the manner of a syphon. For arousing the patient various measures may be resorted to already well known, but electricity is by far the most serviceable when a battery is at hand. The faradic current, and perhaps very powerful, should be employed, and it may be applied to all parts of the body. The weakest current should be used that will provoke muscular contraction. Of the means for restoring respiration, artificial respiration and electricity are the most important. The electricity may be applied to the phrenic nerves, an inspiration induced, and this repeated fifteen or sixteen times a minute. The negative pole always excites a stronger action than the positive, and metallic electrodes are much more efficient than sponges. By means of this agent some desperate cases have been saved when all other means have failed. It must be borne in mind, however, that muscular contraction can be exhausted by too free application of the battery, and such exhaustion must not be mistaken for symptoms of increasing narcotism. Oxygen gas is a very efficient agent. When the respiration is very slow, artificial respiration must be kept up at the same time the gas is administered, in order to get sufficient amount into the lungs to act upon the blood. It stimulates the capillary circulation and thereby aids in relieving the right side of the heart. We have no chemical antidote for opium; nor have we any complete physiological antidote, but we have two agents which may be used with great benefit. These are coffee and belladonna. It is only within the last fifteen or twenty years that any practical results have come from the use of belladonna, and regarding its influence, how it acts, when it is to be administered, and when discontinued, etc., he quoted quite extensively from the paper of Dr. Mary Putnam Jacobi, published in the *Medical Record* in the year 1873, in which she forstalled the report of a special commission appointed in Great Britain, with Dr. Hughes Bennett at its head. Attempts have been made to fix the amount of atropine sufficient to counteract the effects of the opium, but for obvious reasons this connot be done. We must be guided by the degree of narcotism present, and can only judge of the amount of atropine to be given by continuing it in tentative doses until the pupils begin to dilate. It is commonly used hypodermically in from 1-30th to 1-40th grain doses. The

danger has not passed in a case of opium poisoning when consciousness has been restored, but the liability to relapse should make the physician watchful until reaction is fully established, and circulation restored to something near its normal steadiness and volume. But even then there is ulterior danger from consecutive pneumonia, consequently great care should be exercised and every precaution taken to prevent such a sequel. Three cases were reported which illustrated the fact that dangerous narcotism could be induced, while the respiration remained nearly of normal frequency.

In one case the respirations stood at twenty to the minute, and yet the patient was dangerously narcotized. (It was not stated whether there was any evidence of kidney disease or not in these cases.)

A third case was reported in which dangerous narcotism was induced by applying a solution of morphine to a wrist-joint which was the seat of synovitis. The skin was intact. Several cases were reported in which the symptoms of danger were extreme, but the patients had been restored by resorting to the means already mentioned.

Dr. Baylis reported a remarkable case in which the patient, a gentleman forty years of age, had suffered from two attacks of pleuritis. The general condition produced by these attacks was one of restricted lung action and labored heart action. Within three and a half hours he took 150 m. of Magendie's solution (Squibb's), but was not overpowered until six and a half hours after taking it. Profound somnolence continued for eighteen hours; partial somnolence between two and a half and three and a half hours, but he did not recover his mental faculties until twenty-two or three hours after taking the drug. When he did recover his mental faculties he was irritable and cross, which was entirely contrary to his usual disposition. In this case there was pulsation of the carotids. The treatment consisted in the use of atropine, electricity, oxygen gas, injections of beef-tea and brandy, guided with regard to frequency according to the condition of the pulse, external warmth, rubbing, etc., systematically and persistently continued. His respirations were at one time three or four to the minute, skin cold and bathed with perspiration, face cyanosed, etc. Recovery took place without subsequent accident.

Dr. Joel Foster related a case in which a patient of his, a young man, bought twenty-five grains of sulphate of morphine, and, thinking to have a pleasant time, made a pint of exceedingly strong decoction of coffee, put all the morphine into it, and drank the whole. He went to bed expecting soon to go to sleep, but instead of that he did not sleep at all, but became very crazy. His face was flushed, and he did not become cyanosed. In about twenty-four hours he was entirely beyond the influence of the drug, and felt as well as ordinary, except the debility, and is now living. The doctor was of the opinion that the story of the boy was true with regard to the amount taken, and also that it was a good article, for it came from a reliable drug store. The case occurred about twenty years ago.

Dr. Rogers wished some gentleman to explain the cause of the mental perversion alluded to by Dr. Baylis in his case.

Dr. Smith replied that he thought it to be due to the atropine; that it was the result of atropine poisoning rather than the opium poisoning.

Dr. Sell referred to some cases in which very small doses of opium have produced fatal results. These cases are reported in the *Physician and Pharmaceutist*. He opposed the use of opium in any form in the treatment of diseases of children.

Dr. Peaslee referred to a case where a young girl had taken half a bottle of morphine; probably thirty grains, with suicidal intentions. This patient

was marched to and fro, flagellated, and had about one pint of strong coffee, and in about six hours she began to manifest some consciousness. Her breathing was stertorous, and withal it was a desperate case. It occurred a good many years ago, and before the battery and atropine had come into general use. With regard to the use of opium in the treatment of children, he always opposed the use of *laudanum or morphine*, before the child was, perhaps, one or two years old; but he did not exactly agree with Dr. Sell, that opium should never be administered.

Dr. Blake remarked that he had already reported a case of aconite poisoning in which a congested condition of the kidney was found, and he was of the opinion that it is not unreasonable to expect a similar condition of the kidneys in opium poisoning. It has been said of late that it is well to examine the urine in every case. In a case of opium poisoning which he had reported, where recovery took place, all symptoms of narcosis seemed to pass away, and then a state of coma came on which was difficult for him to understand. It seemed to be prolonged to beyond the effect of the poison, and he now believes it was from the effect of renal congestion. (It is a fact of which, perhaps, every practitioner is cognizant, that a certain number of patients, while coming under the influence of opium, for instance in the treatment of peritonitis, suffer from suppression of urine more or less marked.)

Dr. Hubbard referred to a case of opium poisoning in which the alarming symptoms manifested themselves twelve hours after taking *m*xx. of Magendie's solution of morphine hypodermically at two doses, half an hour apart.

The respirations were reduced to eight to the minute, deglutition was impossible, the pupils were contracted, and the sphincters relaxed, etc. As a result of consultation, one-eighth of a grain of sulphate of atropia was administered hypodermically, and in fifteen minutes the pupils were widely dilated. Respiration soon began to increase in frequency, and in about an hour he left the patient doing very well, but never expected to see him alive, supposing that the atropine would kill him. The next day, however, at eleven o'clock, he found him comparatively comfortable. He died four or five days after of pleuro-pneumonia, but the doctor was of the opinion that the influence of the opium had entirely passed away, and could not be reckoned as an immediate factor in producing the death of the patient.—*Med. Record.*

OBSERVATIONS UPON THE ETIOLOGY OF TYPHOID FEVER.

By JNO. S. LYNCH, M. D., Prof. Principles and Practice of Medicine, College of Physicians and Surgeons.

The importance of a careful study of the etiology of disease can scarcely be overestimated at this day, when the almost unanimous conclusion of philosophical students of medicine seems to be that very little can be done by therapeutics in the way of the cure of disease, in the strict sense of the word *cure*, although a great deal may be accomplished in the way of prevention; and that in treatment infinitely better results are obtained when we direct our attention to the causal indications, than when we attempt to meet the "indicato morbi." The careful study of etiology in the past has led to a complete subversion of our previous systems of nosology, whether based upon the ancient symptomatic or modern anatomical classification; and the tendency at this day is to abandon all former systems, and to

construct a nosology based purely upon etiological distinctions. While such an arrangement may seemingly arbitrarily embrace in a class diseases entirely dissimilar in their symptoms, lesions, course and duration, still it seems to be quite as rational as any of the former systems, which presented quite as many incongruities, and has the advantage at least of conveying some intimation of the causes and nature of disease, and furnishing to this extent at least hints both for prophylaxis and treatment.

In no disease with which we are acquainted has there occurred so complete a revolution in medical opinion within the last few years as to its etiology than in typhoid fever, and nothing that I am acquainted with more strikingly illustrates the value of exact scientific observation and careful analysis of observed facts than that revolution in opinion.

But a few decades past there was scarcely to be found a single physician in America or Europe who admitted that typhoid fever was in any sense contagious or infectious. It was generally believed that overcrowding, bad air, sewer gases, the miasm of putrid animal substances, profound exhaustion from overwork, whether physical or mental, and indeed anything which has a tendency to lower the vital forces and break down resistance to morbific influences, could (any one or all of them) cause this fever. Gradually, however, careful observation led to the elimination of one and another of these causes, until finally one only of these came to be accepted as its efficient exciting cause, while the others were still held to be predisposing. And so strongly was it believed that emanations of putrid decomposition of animal matter was the one potential agent in its production, that the name "Pythogenic Fever" was gravely proposed for it by respectable writers, and accepted by large numbers—perhaps a large majority—of intelligent and thoughtful physicians both in this country and Europe. The frequent observation, however, of instances in which a single case had apparently lighted up an extensive epidemic under circumstances in which all the assumed conditions to its causation were absent, finally led to the suspicion that the disease was contagious; and if contagious, there must exist a specific particulate substance which constituted its contagium, which contagium *alone* could cause the disease in the healthy. Budd, of England, was, I believe, the first to declare his belief in a specifically contagious origin of typhoid fever. Niemyer also, as late as October, 1867, expressed the conviction that typhoid fever had both a contagious and a miasmatic origin; but the authority of these two names, great as they are, was insufficient to induce a general acceptance of the doctrine of contagion; and even now, the number and strength of the non-contagionists may be inferred from the asperity with which Mr. Tyndall has been attacked from almost every quarter, for having recently asserted his belief in the contagiousness of typhoid fever, in the common acceptation of that term.

The microscopic investigations, however, of Lebert, Naegeli, Obermeir, Coze, Feltz, Chauveau, and especially of Ferdinand Cohn, into the blood, secretions and dejections of persons suffering from this disease, as well as all the other confessedly contagia, leave no doubt that in typhoid fever there exists a germ distinct and peculiar, upon the presence of which alone the phenomena of the fever depend; which generally excite the disease whenever they enter an organism not protected by a former attack; and *without whose presence typhoid fever cannot exist.* That the disease is therefore contagious is an inevitable deduction, and this is, I believe, generally accepted upon the Continent of Europe. That it is not equally admitted in England and the United States I believe to be because the facts are not generally accessible to the profession of these countries, in consequence of difference in language. Beale, of London, however, while

differing with the authorities I have named, as to the nature of the disease germs in question, fully sustains the germ theory in contagious diseases and in typhoid fever, without, however, in words committing himself to the contagiousness of the latter.

This distinguished author and teacher maintains that the specific contagium of all infectious diseases consists of living matter, which he appropriately calls bioplasm, differing in no essential particular in their sensible or chemical properties from the normal bioplasm found in every living creature, and which grows by imbibition of nutrient material from the circulating fluid, and multiplies only by fission or gemmation after the manner of all the lowest forms of animal and vegetable life. While insisting, however, upon this apparent identity, he maintains that there *is* a difference in these bioplasts, inasmuch as the disease producing bioplasm has impressed upon it a character morbific and malignant peculiarly its own, which it has always possessed, and which it will always retain, never changing into normal bioplasm, nor, as I understand him, ever degrading the latter to its own condition except by assimilation into its own substance. The continental authorities I have named, however, maintain that the contagium in these diseases consists of certain low forms of living creatures, on the confines of the animal and vegetable kingdom, and comprise vibrios, bacteria, and zooglea. Various names have been proposed for them. Thus Naegeli calls them all by the general name schizomycites, from their mode of multiplication; while Lebert proposes the term protomycites. Ferdinand Cohn, whose observations have been fuller perhapss than those of any other author, includes them all under the name of bacteria, of which he makes out four genera, each including one or more species; the basis of his differentiation being the form presented by each genus. Thus we have spherical, rod-like and spiral bacteria, while still another genus remains unclassified because they can not be referred to any distinct form. It is maintained that some one of these low organisms is found in all contagious diseases, and in many miasmatic ones also, and that each disease has its special bacterium, which is always the cause, and not the consequence, of that disease. Without expressing any opinion upon the views of Beale, on the one hand, and the continental investigators on the other, (which indeed I have no right to do, since I have not atttempted to verify either view by actual observation,) I remark that in numbers and singular unanimity in observations the latter seem to be entitled to the highest authority; while the apparent weakness of argument, as well as vagueness of description, exhibited by the former prepare the reader to doubt the correctness of his conclusions, if not the accuracy and reliability of his observations. It should not be forgotten, however, that Beale's observations were made with a higher power than any possessed by the antagonists. I should also have mentioned that Salisbury, in this country, asserted in 1868 that he had discovered in the cutaneous secretion as well in the blood and excrement of typhoid patients, a certain fungoid growth, for which he proposed the name of biolysis typhoides, and which he regarded as the cause of typhoid fever.

While the microscopists differ so widely as to the exact nature of the typhoid germs, clinical observers are equally discordant as to the manner in which the disease germs are transmitted. Some maintain that the germs are always and only introduced into the alimentary canal by drinking water into which the alvine evacuations of the sick have found their way from vaults, sinks, etc. Others, and these are least numerous, while admitting that the pollution of drinking water is one of the modes, say it is not the only one in which the germs find their way into the organism;

maintaining that although the germs exist mainly in the dejecta, yet they may rise into the atmosphere and find their way into the lungs, and thus induce the disease; while still a few others maintain that there is a direct transmission of the poison from person to person, just as small-pox or measles is communicated. Each of these views is supported by a certain number of observations tolerably well established, and capable of explanation upon no other hypothesis.

Although Buhl and Pettenkoffer—*clarabilia nomina*—positively deny the agency of drinking water in conveying the disease, observations to the contrary are so numerous as to leave no doubt whatever, in any unprejudiced mind, that it is so conveyed, and heretofore at least more frequently than by any other vehicle. An enumeration of the epidemics in various parts of the world initiated in this way would consume too much time, but I may mention in this connection than an extensive one was started not long ago in a town in England, by a milkman who diluted his wares with water from a well polluted by typhoid excreta.

But it is quite probable that this is not the only mode of communication, since observations almost quite as numerous, and authorities quite as strong, are to be found in favor of a miasmatic origin of the disease. That the disease should so often be found to be conveyed by water, and less frequently by air, is due to two acts: First, that it is in water or fluids are found the conditions most favorable to the multiplication of the germs and to their dissemination; while in air, their complete desiccation and consequent arrest of proliferation is one of the conditions necessary to portation and dissemination.

Prof. Tyndall—a man whose scientific training and habit of exact investigation eminently qualify him to form a correct judgment in such a matter —insists very strongly upon the contagiousness of the disease in the ordinary sense. Niemyer expresses the opinion—at a time previous to the discussion of the drinking-water theory—"that the extension of typhoid fever by contagion as well as by miasma is even more probable than of typhus;" although he does not consider it "proved, or even as probable, that it spreads solely by contagion." That is, that it does not depend solely on germs found in the body, but may originate autochthonously from the miasma arising from animal decompositions—the pythogenic theory of Murchison. Liebermeister, in his admirable article on typhoid fever in Ziemsen's Miscellany, declares that the autochthonous origin of typhoid is not supported by a single fact incapable of a different explanation, and says the solely contagious origin of the disease is rapidly gaining ground. Not contagious, however, in the ordinary sense, for he strongly denies that it is ever conveyed directly from person to person. He includes typhoid fever with cholera and dysentery among the contagious miasmatic diseases, which he defines to be those in which the poison is formed outside of the body, but in which the germs must be furnished from a pre-existing case of the disease. In other words, that while a contagium vivum is furnished by the body of a typhoid patient, that contagium is not emitted in an active or potential condition, but requires a further development outside the body before it is capable of infecting another body, just as the embryo or scolex of the tapeworm can only be developed in a different situation from that occupied during its embryonic condition. This theory is certainly ingenious, and would reconcile some discrepancies in the facts observed bearing upon this subject, but it is as yet a purely speculative hypothesis without a single particle of proof. All these authors, and many others too numerous to quote, adduce facts sufficient to prove, as I think, incontestably that the contagium of typhoid fever may be conveyed

by air, and enter the system through the respiratory mucous membranes, as well as by water into the alimentary canal, and in either mode produce the disease.

The theory of direct contagion has, I believe, but few advocates. Mr. Tyndall, already mentioned, is its most distinguished, I might almost say its only advocate in Europe. In the United States its advocates are so few that it is an act of courage, I might almost say of heroism, to avow, as I do to-night, a belief in it.

Although strongly attached previously to the doctrine of non-contagion taught both in current medical literature and in the school of medicine in which I graduated, I became thoroughly convinced sixteen years ago, and long before the doctrine of specific germs in this disease was even discussed, much less accepted, that typhoid fever was, under some circumstances at least, capable of being communicated from person to person as other contagious diseases were. The facts which came under my observation at that time proved to me that in some way a single case of typhoid fever could start an endless train of cases in a locality previously free from it, and where there did not and could not exist either polluted springs or putrifying animal remains.

MOTOR CENTERS IN THE CEREBRAL CONVOLUTIONS.

The committee appointed to investigate the above matter by the New York Society of electrology and neurology made an interesting report, (*New York Medical Journal*, March, 1875). The character of these gentlemen is a guarantee that the experiments were honestly and carefully made. They confirm the most important results obtained by Hertzig and those who followed him. They found certain limited spots upon the surface of the cerebral convolutions, the irritation of which by a weak galvanic current was followed by a distinct momentary contraction of separate muscles or groups of muscles on the opposite side of the body. The same galvanic stimulus is without effect if applied to other points not more than five millimeters distant, and when reapplied to the former spot will again produce the same contractions as before. The number of repetitions of particular contractions following galvanization leaves no question as to the reality of the connection between them.

In repeated instances, corresponding points upon the right and left sides of the brain act experimentally as centers of motion for similar groups of muscles on the left and right sides of the body. The action of the cerebral convolutions in producing muscular contraction, when this contraction is definite and limited, is always a cross action.

Galvanization of the dura mater, or other sensitive parts, produces, on the contrary, by reflex action, muscular twitching on the same side of the body.

After the dura mater had been removed, application of the electrodes to the surface of the convolutions in the same experiment, produced thirty-two times distinct muscular contraction on the opposite side of the body alone.

All the centers of motion for the anterior and posterior limbs are situated in the convolution immediately surrounding the frontal fissure.

The centers for flexion and extension of the anterior and posterior limbs were always found in the external part of the præfrontal convolution, just anterior to this fissure, and in the postfrontal convolution just behind it.

The center for flexion of the head and neck in the median line is in the lateral and anterior part of the præfrontal convolution, while it bends downward and outward—that for flexion of the head with rotation towards the side of the stimulus, is in a part of the convolution situated still farther towards the front, and downwards, so as to be invisible in a view of the brain taken from above.

The center for the facial muscles is in a region situated on the lateral part of the hemisphere, immediately about the supra-sylvian fissure. These localities are essentially the same as those given by Hertzig. · The currents employed were always weak.

MILK.

From a paper in the *Sanitarian*, by E. W. Gray, M. D.

Thus much in relation to the infection of milk with typhoid poison.

What of the other contagia?

The fact that scarlatina may be communicated by means of infected milk seems well authenticated, but the limits of this paper will not permit the details of proof. Dr. Dougall says: "That scarlatina has been disseminated by milk, has been satisfactorily shown by Prof. O. Bell, of St. Andrews, and quite recently by Dr. Robinson, of Leeds," and he is evidently inclined to believe that all the zymotica can be propagated in the same way.

The generally accepted hypothesis that the contagia propagate by means of fermentation, or by some process analogous to fermentation, favors the theory that they may infect milk, since we have in milk "a fermentable body—casein, and a fermentescible substance—sugar," which always unite to sustain the process of fermentation, when the conditions are suitable. But the evidence of possible infection must rest on facts, and not on theory, and hence all those instances which seem to point to such infection are worthy of the gravest consideration.

J. Alfred Franklyn, whose eminent qualifications and authority will hardly be questioned, says: "Milk, after it has been yielded by the animal, may suffer contamination at a later stage. A case is recorded where, in the process of milking, which was performed by persons recovering from scarlet fever, the infection of scarlet fever was conveyed by the milk to children who drank it. This is, I believe, authentic enough.

It was supposed, from some observations made by Prof. Low, of Cornell University, that the milk of a certain dairy had been rendered impure by the cows drinking water from a "stagnant pool, located in a muddy swale." "If the lives of these foul organisms," it is said, "are not destroyed when taken up by the cows in their drink, but pass into the circulation, tainting the blood, entering the secretions and establishing their filthy abode in the milk—there to increase and multiply in vast numbers, causing the milk to be a mass of filth—then it is reasonable enough to suppose that persons partaking of this milk, even when freshly drawn, are liable to have their blood inoculated, and thereby contract disease" But such a hypothesis is highly improbable. There is nothing said of the size of the foul organisms seen by Prof. Low, but we may safely assume that even if swallowed and not destroyed, they could not enter the blood except by physical force, rupturing the epithelial covering of the mucous membrane, and, when once in the blood, how could they find their way into the secretions? Mr. Alfred Small, of London, some time ago, published in the *Times*, some observations on the effect of feeding milk cows upon sewage grass, and

introduces his remarks by stating that he is "in a position to explain the occurrence of typhoid fever from the use of milk." He thinks he has traced milk infection to the feeding of cows upon sewage grass.

But the possibility of infecting milk by such feeding has been made the subject of elaborate and careful examination and experiment, the result of which is, that "all such fears are illusory, and that practically there is no more danger in applying sewage to grass, than in applying liquid manure of a farm-yard to a growing crop." In a state of healthy growth, the absorbents, vegetable and animal, take up and assimilate their proper aliment, and reject all else, and what has been once assimilated and secreted as milk is within narrow limits of the same constitution, from whatever source drawn. The milk from a healthy animal, therefore, must be good till it has obsorbed offensive odors, or has been rendered poisonous by adulteration or external infection.

The milk of diseased cows is always unsafe, sometimes highly poisonous. This hardly needs more than stating. The abhorrence we experience at the thought of using such milk is an instinctive warning and protest against it. But the milk of cows that have been overheated or greatly excited is unsafe—a fact not so well understood. It is now well known that overheating and exciting cattle renders their flesh unhealthy and poisonous,—(Angel)—and if such an effect can be produced by such a course, upon the flesh, it would seem very probable that the fluids and secretions would also be injuriously, and even more easily, affected in this way. Besides, it is well known that the milk of the human mother may be rendered poisonous, and wholly unfit for her babe, by a fit of violent passion.

The quiet and leisurely step of the "family cow," in her homeward way, indicates how averse milk cows, and cattle generally, are to worry and excitement, and there can be no doubt that fright and excitement and overheating most profoundly affect the physiological processes, and in such a way as to render both their flesh and their milk unfit for use.

The following is condensed from Park's Manual of Practical Hygiene, without his references to authorities:

"Prof. Masler has directed attention to the poisonous effects of 'blue milk'—that is, milk covered with a layer of blue substance, which is in fact a fungus, either the *oidium lactis*, or *penicillium*, which seems to have the power, in certain conditions, of causing the appearance in the milk of an aniline-like substance. Milk of this kind gives rise to gastric irritation, and severe febrile gastritis. Milk, which is not blue, but which contains large quantities of oidium, appears to produce many dyspeptic symptoms, and even cholera-like attacks, as possibly to give rise to some aphthous affections, in the mouth, in children. Milk contaminated with pus from an inflamed udder, or an abscess on the udder, will give rise to stomatitis in children, and to aphthæ on the mucous membrane of the lips and gums. There are some striking cases which seem to me sufficient to prove that disease of the mouth, and sometimes, though rarely, an affection of the feet, may be contracted from the milk of cows suffering from eczema epizootica—a disease which affects the feet and mouths of these animals."

That milk rapidly absorbs various and offensive odors is a familiar fact. Dr. H. Wellington was called to visit a patient in the house of a milk vendor, from whom he had some time previously purchased milk. The odor of the house was dreadful from some defective drains. He noticed "eight or nine open pans of milk standing on chairs; so mawkish the odor that he could not tolerate it, and then he was able to account for the sickening odors he had often noticed while using the milk, and also for the gastric attacks and fever his family had suffered.

Lawson Lait, Esq. (Birmingham), inclosed "fresh milk under belljars with tar, turpentine, assafœtida, fæces, urine, etc., and found that in most instances the milk became impregnated with the smell, and sometimes with that intensely diagreeable sensation which we know as the 'taste like the smell.'"—*British Medical Journal.*

Oil is a good solvent of odoriferous substances, and milk kept in close impure air is rapidly spoiled, and will not make butter fit to use, as is well known by those having experience in making butter. There must be pure air and good ventilation if you are to have good milk and butter.

We conclude then:

First. Milk is capable of receiving and propagating at least some of the contagions; and that it may become infected by the admixture of even a small quantity of infected water, or by absorbing the poison from an infected atmosphere. As the substance of these poisons is not recognizable by the senses, and has not been revealed by the microscope, or by chemical analysis, there exists no means of knowing whether milk is infected and poisonous or not, and hence the necessity of the greatest precaution to prevent exposure.

Second. The milk of diseased cows, or such as are not in good physiological condition, from irregular and bad feeding, from abuse, overheating and excitement, or from any cause whatever, is always unsafe and dangerous; and hence the necessity of generous feeding with good wholesome food, and habitual leisurely handling and tender treatment, in order to obtain a good and perfectly safe article of milk.

Third. That milk will absorb from the atmosphere offensive and hurtful odors and poisonous gases, if such exist in contiguity, and hence the necessity of keeping it in good cool well ventilated apartments, well removed and protected from all odoriferous and decaying matter, and in vessels kept scrupulously clean and sweet by frequent ablutions in boiling water.

It only remains to call attention to the fact, already we believe quite generally suspected, that milk is often *intentionally* either robbed of its cream or diluted and adulterated.

The temptation to remove at least a part of the cream is very great, and in the ordinary trade this dishonesty is without doubt very common.

But the addition of water, sometimes filthy and poisonous water from the cow-yard well, for the purpose of diluting and enlarging the quantity, is the great crime of milk dealers. It is not here intimated, that there are not in this businees many honest and honorable men, whose integrity and fair dealing are above suspicion, but it is well known that there are many who are guilty of this fraud. Most of these are found among jobbers and speculators in large cities, who get in between the producer and the consumer, too often for the express purpose of dishonest gain.

The extent to which this fraud is practiced is no doubt very great.

In the city of New York the board of health have recently directed several sanitary officers to visit the various places in the city where milk is retailed, with a view of testing its quality; and so far the results show a "very general use of water." "Recent examinations," says Letheby, "of a large number of samples of milk from the metropolitan (London) workhouses, has proved to me that the milk is generally of poor quality, and has either been skimmed or diluted with from ten to fifty per cent. of wate."

The daily supply of milk for the city of Boston, during the year 1872, was, according to estimates, 24,000 gallons, which for the entire year would amount to 8,763,285 gallons, the cost of which to consumers may be reckoned at $2,979,516.

During this year, twelve samples of milk "procured from first-class grocers and milk men, who were supposed to deal in pure milk," were examined by Prof. J. F. Babcock, analyst to the city of Boston. Two of these were found pure, the rest sophisticated. The added water ranged from ten to twenty-five per cent., and the average amount for the twelve specimens is thirteen and one third per cent.

If these samples may be taken as fairly representing the milk sold in Boston, the good people of that city paid during that year $476,721 for the water fraudulently added to the milk they used! A recent number of the *New York Herald* estimates that, in the city of New York, 500,000 quarts of milk are used daily, and at certain seasons of the year even a larger amount. Milk is sold to the consumer at eight cents per quart in summer, and ten in winter. If we put the average price at nine cents per quart, the daily cost of the milk supply is, according to this estimate, not less than $45,000, and for the year $16,425,000. If now we suppose that the milk of New York is sophisticated to the same extent as that of Boston, and this is certainly very probable, the good people of the Empire city pay $2,190,000 annually to the dealers for diluting and spoiling their milk! Are they at all aware of the stupendous fraud thus practiced upon them? We know that attempts are being made by the government to protect the people from this imposition, and we hope they may prove more successful than such attempts have generally been. Will not the people demand such legislation as will protect them?

Other substances are added to give, or rather to restore, color, consistence, and taste to the milk thus diluted. Among these are flour or starch, gum arabic or dextrine, cerebral matter, chalk or whiting, turmeric or annatto, gum tragacanth, carbonate of magnesia, arrowroot, sugar, emulsions of almond or hemp seeds, carbonate of soda, eggs and salt.

These, generally two or more of them, are adroitly added by rascally experts, in proportions best adapted to conceal the thinness and bluish color of the diluted milk, to preserve its normal specific gravity, to neutralize its acid after long standing, to preserve its taste, or generally to conceal the fraud as perfectly as possible.

It would seem that most of these substances are innocent enough, but aside from the injury done to adult consumers, especially to the sick and invalid who use it, it must be remembered that in every city there are many infants who must subsist entirely upon milk. We know how difficult it is to feed a child upon the milk of the cow, when carefully selected and pure. How many then of these unoffending and helpless victims, fed upon skimmed or diluted and sophisticated milk, have been sacrificed to appease the cupidity of unscrupulous milk dealers.

INJECTIONS OF TINCTURE OF IODINE INTO THE CAVITY OF THE UTERUS.

In comparison with *iron*, *tinct. iodine* has the advantage, so far as we now know, of being perfectly safe; at any rate, free from the evils incident to the employment of iron. Besides this we have the direct antiseptic influence of the iodine upon the uterine and vaginal mucous membrane. The application of iodine to the lining membrane of the uterus is, probably, of all things the surest means of counteracting a tendency to absorption of septic matter into the system after delivery. Since adopting the practice of injecting tr.

iodine after opertions upon the interior of the uterus, Dr. Emmet has not encountered a single case of septicæmia. As contrasted with the salts of iron in this respect, it would seem as if there could be no room for hesitation in the choice. From the local action of iodine not only is nothing to be feared, but even advantages to be anticipated; while from the local action of iron much may be apprehended. As an excito-motor agent, iodine is probably at least equally good, while incapable of causing the formation of thrombi in the uterine vessels. In view of these facts one would feel justified in resorting to the iodine earlier than to the iron, and in this respect also an advantage may be gained for the patient, since the use of iron is expressly limited to cases deemed hopeless under ordinary management.

We all know how impossible it is to limit the use of any expedient to the cases for which it is expressly designed. Thus was it with Simpson's plan of detaching the placenta, distinctly limited by its author to cases of extreme severity in which the life of the child was of the least moment, and yet employed by not a few as early as the state of the os would permit. The same is true of the subject under consideration. Dr. Hicks, a practitioner of deservedly large influence, had used the iron injections a "great number" of times. No matter how extensive a man's practice may be, he can scarcely have met with a "great number" in which the conditions are those which Dr. Barnes prescribes; and indeed, as we have already seen, we find Dr. Barnes himself acknowledging the influence of the injection in causing the womb to contract. In those instances in which the event shows that reflex action may still be excited by a new and efficient stimulent, there surely is no need of the *coagulating* power of the injection. We must admit that a stop may be put to the loss of blood by the local action of the styptic as the blood flows from the open vessels, and that in the absence of reflex action the woman, if she recovers, must owe her life to injection as a styptic alone; but these cases must be exceptional, and form but a small proportion of those in which it has been resorted to.

In recapitulation we may briefly say that we have sought to show:

1st. That a very considerable proportion of cases in which the injection of salts of iron has apparently saved life, have been those in which it accomplished this end, not in virtue of its local styptic action, but because of its power to excite reflex action, when cold, friction, pressure, etc., have failed.

2d. That when it produces coagulation of blood in the orifices of blood-vessels there is danger that the coägulation may follow the vessels into the substance of the uterus, producing dangerous thrombi, and that the blood already collected in the cavity of the uterus also may become converted into a hard, intractable coagulum, which the uterus cannot expel, and which may, after a few days, decompose and give rise to septicæmia.

3d. That there is evidence for believing that as an excitor of dormant reflex action, tinct. iodine may be substituted for the iron with positive advantages from its efficiency as an excitor and from its antiseptic properties.

If these points are established, the use of iron salts, in a solution sufficiently strong to induce coagulation of blood in the uterine vessels, should at any rate not be resorted to until tinct. of iodine has been tried and failed.

In conclusion, I would distinctly disavow the position of claiming positively for iodine a superiority over the iron. More facts are needed to warrant this. I have simply sought to present the considerations that render it extremely probable that the one will be found an advantageous substitute for the other, when it shall have received at the hands of the profession a sufficient trial.—*Amer. Journal of Obstetrics*, February, 1875.

Microscopy.

PROGRESS OF MICROSCOPICAL SCIENCE.

From *Monthly Microscopical Journal*, May, 1875.

THE FECUNDATION OF CERTAIN FUNGI.—The *Academy* (March 13) [which by the way is a thoroughly able paper] has an interesting note on M. von Tieghem's researches on the above subject. This savant has recently brought before the French Academy some interesting experiments on the fecundation of certain fungi (*Basidiomycetes*), confirming the statements of M. Reess, to which he refers, and throwing fresh light on the interesting question of sexuality in these lower organisms. M. Reess made his observations on the common dung fungus *Coprinus stercorarius*, and M. von Tieghem selected for his *Coprinus ephemeroids*. Placing a spore of this little agaric in a decoction of dung, and confining it in a cell, under the microscope, he found it soon germinated, producing a branched cellular mycelium, anastomosing, not only from branch to branch, but from cell to cell, along each branch; the branches being about 0.003 mm. in diameter. In most cases the mycelium tubes produced, in the course of five or six days, tufts of narrow rods (*baguettes*), springing, sometimes to the number of twenty, from the tip of a short lateral branch. Each of these rods divided itself into two smaller ones (*batonnets*). The upper one detached itself and fell away; the lower one grew at its base and divided again. When this had gone on two or three times, the basilar joint fell off, and there remained only a pedicel and a great number of small white rods lying by it. These were 0.004 mm. to 0.005 mm. long, and 0.0015 mm. wide, and often having a brilliant granule at each end. When these rods were sown in the dung decoction they did not germinate. In another set of similar experiments, no rods appeared, but about the seventh or eighth day—that is to say, when the little rods in the contemporary experiments had separated from the stems, certain lateral branches swelled at their summits, forming large vesicles, separated by partitions from the pedicels bearing them. Sometimes these vesicles, which contained a dense protoplasm, and usually exhibited three vacuoles, grew in loose tufts. M. von Tieghem, having thus obtained the little rods and the vesicles in separate growing cells, brought them together, and saw the "rods" attach themselves to the vesicles, and empty into them their contents. The vesicles thus fecundated lost their vacuoles, formed two internal divisions, and transformed themselves into large tubes composed of three superimposed barrel-shaped cells. The basilar cells, which were the longest and narrowest, soon pushed out curved lateral branches, and were followed by the medium cells. The branches, which were multicellular and ramose, pressed against each other and formed a little white tubercle, the beginning of the fruit.

THE "MEMBRANA NUCLEI" IN THE SEEDS OF CYCADS.—At the meeting of the Linnean Society, on March 4, Prof. Thiselton Dyer read a brief note on the structure of the so-called "membrana nuclei" in the seeds of Cycads. Heinzel had described this as a cellular structure, the cells of which had thick walls penetrated by ramifying tubes. There is reason, however, for believing that the membrane only represents the wall of a single cell, and is, in fact, probably the greatly enlarged primary embryo-sac. What Heinzel had taken for tubes seemed really to be solid. They are arranged all over the membrane after the fashion of what carpet manufactureres call "moss-pattern." They are possibly the debris of the thickened

walls of the cells of the nucleus which had been destroyed by the enlargement of the primary embryo-sac. In the discussion which ensued a remarkable diversity of opinion was displayed among the microscopists present, as to whether the reagent magenta exhibits the largest amount of its characteristic reaction on the cellulose wall of the cell or on its protoplasmic cell-contents.

WHERE DO THE WHITE CORPUSCLES GET THROUGH THE BLOOD-VESSELS?—This question is answered by M. L. Purves in a recent number of a *Utrecht Journal*, which has been abstracted in the *Medical Record* lately by Dr. W. Stirling. It states that M. Purves, in order to investigate the place where the white blood-corpuscles pass through the wall of the vessel in Cohnheim's experiment on inflammation, injected a solution of silver into the vessels of a frog prepared after the manner of Cohnheim. The colorless corpuscles, without exception, wander out between the boundaries of the epithelioid cells. They never pass through the substance or through the nucleus of an epithelioid cell. According to the author, the red corpuscles only pass out by those channels which have been previously made for them by the colorless corpuscles. The author found no stomata of any kind on the epithelium of the vessels.

NATURAL HISTORY OF THE DIATOMACEÆ.—Dr. M. C. Cooke states in *Grevillea*, (March, 1875), that Dr. Edwards has sent him a copy of the chapter from the Reports of the Geological Survey on the above subject, which is written in a popular style for general readers, and extends over nearly one hundred quarto pages. The sections into which it is divided are: 1. Introduction. 2. Movements of the Diatomaceæ. 3. Mode of growth of the Diatomaceæ. 4. Reproduction of the Diatomaceæ. 5. Modes of occurrence and uses to man of the Diatomaceæ. 6. The Diatomaceæ and Geology. 7. Directions for collecting, preserving, and transporting specimens of Diatomaceæ. 8. How to prepare specimens of Diatomaceæ for examination and study by means of the microscope. This enumeration of the sections will give an idea of the scope of the "history," which will doubtless be of eminent service in the direction for which it is intended. "Unfortunately the general public know but little, and care less, about the lower cryptogamia, except for algæ grouped as pretty objects for the drawing room, or ornate diatoms arranged in groups to please soiree hunters, or stewed mushrooms, and perigord pies."

THE COMPOUND MICROSCOPE IN THE EXAMINATION OF PATIENTS.—Dr. H. G. Piffard has devised a simple contrivance by means of which the binocular microscope can be employed in the ordinary "out-patient room," for the examination of the skin of patients suffering from skin affections. The inventor's remarks in the last number of the *Archives of Dermatology* are, as to the subject of the aberration of lenses, utterly unimportant. But his idea of employing the binocular is a good one. He says: "The objectives which I employ are a 6″, 2″, and 1″ of Grunow, a 4″ and ½″ of Ross. The ½″ is made with taper front, specially constructed for use with reflected light. The advantages of this arrangement over the single lens, are enlargement of the field of view, absence of spherical and chromatic aberrations, convenient distance of the observer's eye from the object observed, ten times the amplification practically attainable with the simple microscope, and lastly, the very great advantage of true stereoscopic vision. With the instrument described any portion of the integument from the scalp to the sole of the feet can be conveniently examined, and a prolonged examination can be made without fatigue to the observer. The

ordinary diffused light of a bright day affords ample illumination with all the objectives except the $\frac{1}{2}''$. For this we need direct sunlight. If the examination be made at night or in a dark place, the light from a Tobold or other good illuminator, concentrated upon the object with a mirror or bull's-eye condenser, will answer every purpose."

DR. J. CHESTON MORRIS' REPORT ON OBJECTIVES.

To the Editor of the Cincinnati Medical News:

SIR:—In your last (May) number of the NEWS I notice the report "of the committee appointed to examine optically the 1-25th and 1-50th objectives displayed" at the late exhibition of the Biological and Microscopical Section of the Academy of Natural Sciences of Philadelphia.

According to this report it seems that of the six objectives tested (?) a Tolles' wet 1-50th of 140°, and a Wales' 1-25th of 170°, were the only glasses that displayed the hexagons (?) of p. angulatum by central light.

A few months since, a correspondent of the *London Microscopical Journal* proposed using p. angulatum with central light from an ordinary candle, as a *test* for objectives of medium power. I at once repeated his experiment, using a 1-6th and 1-10th 4 system immersion glasses, made by R. B. Tolles, and was simply amused at the result, to wit: the hexagons were instantly displayed with either objective, using a common tallow candle for illumination—the angle of obliquity 0!

A friend of mine, a well known "expert," who had just purchased a Tolles' 4 system 1-10th, read this article in the *London Journal*, advised me that he too repeated the experiments, and with the same results as I obtained with my 1-6th and 1-10th.

The "committee appointed to examine optically, etc.," having obtained the above stated curious results, to wit: that the 1-50th and the 1-25th were the only glasses that would display the angulata hexagons by central light, proceed to "deduce one *very important fact*" (italics mine), viz: That the different appearances of lines, dots, hexagons, etc., on p. angulatum are not only the varied results of angle of aperture, of amplification, and of illumination, but that they may be obtained with *less and less ōbliquity* of light *as we increase the power of the objective* (italics mine again), thus making it evident that high powers, with direct central light, show us clearly things which we rather guessed at than saw (owing to the increased chance of spherical and chromatic aberration and distortion from the employment of oblique light) with lower ones. (!)

The committee therefore conclude by recommending these higher power lenses to those engaged in microscopic research, etc.

This was too much for Dr. Hunt to stand. The doctor desired it to be distinctly understood that *he* had nothing to do with the preparation of the report, and did not wish to be held responsible as a member of the committee for the views advanced in it. Dr. Hunt considered that it embodied the obsolete views of Carpenter and Beale in regard to penetration, which term, he says, should be dropped from the vocabulary of microscopists. "He believed that penetration and resolution can be and *have been* combined in the best objectives."

Dr. Hunt, having thus washed his hands of this most curious report, makes a novel and startling proposition, "*the object being to test men* in regard to their technological skill." This is a brilliant idea and to the point—rather *omnious* for the committee however!

Ashtabula, Ohio. J. EDWARDS SMITH.

ANGLE OF APERTURE.

By R. B. Tolles, Esq., Boston, Massachussetts.

I desire to call attention to the following extract:

"Mr. Wenham is unquestionably right in stating that if an isosceles triangle be described, the base of which is ten times the measured diameter of the front lens, and the altitude ten times the measured distance of the focal point from the same surface, the vertical angle of that triangle will correctly represent the *maximum available* aperture." (From the Annual Address of President Charles Brooke before the *Royal Microscopical Society*, London, February, 1875.)

Taken as stated here by Mr. Brooke, the rule proves contradictory. Thus, Mr. Wenham gives the focus of the objective he measured, (*Monthly Microscopical Journal*, March, 1874, p. 114.) as .013 of an inch *in air*. Diameter of front surface .043 of an inch. From these data he deduces that 118° is the maximum angle *possible* in the case from *plain measurement*, etc. But Mr. Brooke says, the rule gives "the *maximum available* aperture." Apply this rule then to get the aperture *in* "*balsam*."

Here are the data: Mr. Wenham, in the *Monthly Micro. Journal* for May, 1875, p. 225, gives the *focus in balsam* as 0.018 of an inch. Thus we have the elements for the triangle in balsam. Applying the rule we get a "verticle angle" of 88°. But 82° in "balsam" is equivalent to (infinitely near) 180° of pencil entering or emerging at a plane surface. Consequently their rule with Mr. Wenham's *own data*, viz., diameter 0.043, median height 0.018, proves the objective he declared (*M. M. Journal* for March, 1874, p. 114) could not by any possibility have more than 118° of aperture, has, *by lhe same rule*, all the air-angle, *i. e.*, angle for a dry mount, that any objective possibly can have.

THE MICROSCOPE AND ITS MISINTERPRETATIONS.

By John Michels.

The old adage that "seeing is believing" has long been exploded, and folks nowadays receive with caution the impressions conveyed by their eyesight.

There is still, however, a fixed idea with many people that, when the human sight is aided by powerful and correctly-constructed optical instruments, full reliance can be placed upon such united powers, and that the investigator may record that which he believes he sees as veritable and established facts.

In contradiction of such belief I shall place before the reader some curious results, which will show that the utmost caution is required by those using optical instruments for the elucidation of scientific problems or ordinary research.

Quite an interesting paper could be written upon the optical delusions with which astronomers have to contend in the use of the telescope, but I propose to confine my remarks to the difficulties which beset the path of the microscopist, in obtaining truthful and accurate results, while using the microscope, leading to the most contradictory statements from men whose powers of observation and skill in the use of the instrument are admitted.

Those who make use of a microscope for the first time are usually fascinated by the wonderful and beautiful appearances presented, and, having illuminated the object under examination with a flood of light, and

focused it to their satisfaction, congratulate themselves upon the ease with which they have handled the instrument, and fondly believe they have attained to a knowledge of its use. More extended study, however, and the use of high powers with the more complicated pieces of apparatus, soon convince the student that the instrument requires the most delicate manipulation, and that much practice is necessary before its true powers are developed.

Until full command over a microscope has been acquired, the most contradictory and perplexing results are obtained by those who use high powers in the examination of difficult objects, especially if the subject is very transparent. Things examined yesterday appear quite different to-day, both in form and color; and, even while the eye is still fixed upon the object, a slight change in the position of the mirror will alter its appearance, or present entirely new features.

Again, an object mounted in different mediums, or without any, will present the most varied appearances, and the honest investigator is thus embarrassed to decide which is the true form.

These complications follow the use of the instrument through all its stages; but, when the causes are well understood, the difficulties are reduced to a minimum, and even turned to account in the examination of difficult objects.

Great success in the use of the microscope can only be obtained by the skillful manipulation of the light, and he that is not acquainted with the numerous schemes, devices, and contrivances in its management, might as well be in the dark; no directions here avail, and nothing but diligent and constant practice will render the student efficient in this respect.

I once stood an hour watching a leading London optician struggling to show me the true markings of a diatom with a new object glass he had recently constructed, with which he had had no previous difficulty. He at last gave up the attempt in despair. Of course, an objective that has once performed a specific test will do so again. In this case, the only thing in fault was the management of the light. This had disgraced the object glass, and enraged its maker.

In contrast with the above case, I may mention the real pleasure I experienced in witnessing the skill of a professional microscopist of this country. In his hands all difficulties appeared to vanish, and he showed me one of the most difficult objects known, with marvelous promptitude.

But, to return to my subject: To enable the student to familiarize himself with the true power of the microscope, and to train his eyes to detect errors of vision, certain well known test-objects are in general use; which are also convenient to test the quality and power of objectives. A favorite object of this class is the scale of the Podura, a minute insect, which dwells in remote nooks of dark and damp cellars, and similar localities.

This scale is usually mounted dry, and, when viewed under the compound microscope with suitable objectives, presents a surface studded with marks similar to the well known note of exclamation (!).

This test-object has been for years the delight of microscopists possessing high powers, and a sharp definition of its peculiar markings, as above mentioned, was accepted as its true appearance and form.

For twenty-five years this scale was under constant examination by every grade of microscopists, from the grandees of the Royal Microscopical Society to the humble tyro, without any new or special feature being noticed, when on November 10, 1869, Dr. G. W. Royston Piggott, F. R. M. S., read a paper "On High-Power Definition," before the Royal Microscopical Society, and surprised the members by stating that all these years they

had been gazing at the podura-scale, but had never yet seen its true markings. Dr. Piggott's paper described very fully what he had discovered as the true markings, and illustrated it with drawings which represented them to be distinctly of a beaded character; in fact, as dissimilar from the old accepted idea of their form as contrast could depict them.

Every microscopist was now hunting poduræ, and cellars damp and dismal werê ransacked for the little scale-bearers, doubtless to the astonishment of numerous colonies of spiders, who must have been much provoked by this invasion, and thus commenced a controversy which is not yet concluded. Men equally eminent have taken opposite sides, and expressed the most contrary opinions; and I now propose to give a brief *resume* of what has been said and done in regard to this subject, because the matter is full of instruction to those interested in microscopical research. Not that the markings of the podura are of the slightest importance, or have any scientific significance, but the gravity of the conclusions which are sought hinges upon the fact that, if the views of Dr. Piggott are correct, our most eminent microscopists have been promulgating false and erroneous statements respecting the form of a well known and common object; and, in whatever light the controversy is viewed, the humiliating confession must be made that they are still unable to determine the correct focus or the proper method of illuminating it.

Dr. Piggott commences by calling resolving the podura-scale "a difficult enterprise," and then describes the beaded appearance in the following manner: "Under a low power, as 80 or 100, the podura-scale is remarkable for its wavy markings, compared to watered silk; raising the power to 200 or 250, and using a side-light, the waviness disappears, and in its place longitudinal *ribbing* appears; with 1,200, they divide themselves into a string of longitudinal beads; but with 2,300 they appear to lie in the same plane and terminate abruptly on the basic membrane; in focusing for the beads attached to the lower side, the beadings appear in the intercostal spaces."

Respecting the old received views of the podura-scale, Dr. Piggott says: "With 300 to 500, the celebrated 'spines' appear, according to the size of the scale, as very dark tapering marks (like 'notes of admiration' without the dots !!!). To see these clearly with 2,500 has been considered the *ne plus ultra* of microscopical triumphs, and it is consequently with no small diffidence that the writer ventures to traverse the belief of twenty-five years."

Dr. Piggott further states that he reckons these beads to be 1-50000 to 1-150000 of an inch in diameter, and that the "spines," which he calls spurious, really embrace in general three or four beads, while the intervening space abounds with beads seen through the basic membrane, and very difficult of observation without special management; and concludes with the remark that he expects in a few months the podura beadings, such as he described them, will be fully established.

Thus was the gauntlet thrown down, and the challenge was at once accepted by various members of the society, who, on the conclusion of the reading of the paper, at once disputed the doctrine. Mr. J. Beck was the first to express an opinion, and rather increased the confusion of the subject by stating that both the spines and the beads were illusory, and that the true structure of the podura-scale was a series of corrugations on one side, and that the reverse side was slightly undulating or nearly smooth, and that the notes of exclamation were due to refraction of light.

Mr. Hogg, the Hon. Secretary of the Society, thought Dr. Piggott in error; he had never seen such appearances as beads; thought probably Dr. Piggott had seen them by using too deep an eye-piece, bad illumination, and

drawing out the tube of the microscope to too great an extent; or, perhaps, to a disturbed vision caused by advanced age and presbyopia.

The President, the Rev. J. B. Reed, followed by stating that he agreed with the observations made by Mr. Hogg, and such was his faith in the skill of the opticians of the day, that he could not but feel that what he saw with their instruments really existed.

On the same date and occasion on which Dr. Piggott expounded his views, Mr. S. J. McIntire, a member of the same society, read a paper "On the Scales of Certain Insects of the Order Thysanura." Now, Mr. McIntire, although a recent member, and young in microscopical research, is always listened to on this subject with respect by the society, having devoted his attention specially to these insects, and shown a patient and intelligent power of observing, not only their structure but their habits; he, in his communication, opposed Dr. Piggott's views, and calls the beads "optical illusions," and concurred with Mr. Beck's statement that the surface of the scale is corrugated, but flatly contradicts him by stating that both sides are alike.

December 8, 1869.—The President, the Rev. J. B. Read, stated that he, with Dr. Miller, and others, had interviewed Dr. Piggott, and was bound to say he had seen the beaded appearances, and it was clear to him, *now*, that in the best object-glasses small residuary aberration existed.

This slur upon the best object-glasses brought out Mr. Wenham with a paper in the *Microscopical Journal* of June, 1870, in which he repudiated such error, and described the beaded appearance as an illusion, obtained by a trick of illumination, and by examining the scale with the microscope out of focus.

At the June Meeting of the Royal Microscopical Society, a letter was read from Colonel Woodward, of Washington, inclosing photographs of the podura-scale, showing what he considered to be the true appearance. These photographs showed the spines. Colonel Woodward, however, reserved his opinion, and asked for a specimen of the true test podura-scale.

Dr. Maddox, in August, exhibited various photographs of podura-scales, which Mr. Wenham commented on in a paper to the *Microscopical Journal*, of September following, which merely reiterated his views that the "spines" were the true appearance of podura-scales.

The Rev. J. B. Read, in the *Popular Science Review*, of April, 1870, appears to accept Dr. Piggott's views entirely, and writes: "I can now see with my own powers what has been before invisible, viz., the beautiful beaded structure of the whole test-scale, as discovered by Dr. Piggott."

It would be tedious to continue the subject and give even an outline of the papers and discussions that have been provoked by this knotty question: I shall, therefore, conclude by stating that Colonel Woodward has since produced two photographs, showing the two aspects of the question; they are made from authentic scales, and are pronounced very perfect.

In further illustration of the difficulty of obtaining a true and reliable image of an object when viewed under the microscope with high powers, I offer drawings which have been made by Mr. Ralph H. Westropp, B. A., T. C. D., of Allyflin Park, England, and represented at Figs, 4, 5, 6. These figures all represent the same object, a scale of podura viewed under different phases of oblique light; they are interesting as showing the effect produced by the play of light upon a refractive object. The reader will note that not only the details of the markings are greatly changed, but the very outline of the figures.

The fact that the most skillful microscopists of the age all differ upon the true appearances of a common and not very minute object, and the micros-

cope itself presenting to the vision the most opposite appearances of one and the same object, should act as a caution to those who accept too readily theories based upon microscopical research; and suggests that, in the cause of justice, when life is at stake, single-handed evidence relating to the microscopical examination of apparent blood-stains should be verified at least by a second person before being accepted.

Thus we see that the so called revelations of the microscope are but hieroglyphics, needing the interpretation of a mind of the highest culture, and that while the microscope is a good servant it is a bad master—mighty in the hands of a Huxley, but as useless to a man without the powers of discrimination as the chisel of Michael Angelo would be in the hands of a Modoc.—*Popular Science Monthly*, for June.

DOUBLE STAINING OF WOOD AND OTHER VEGETABLE SECTIONS.

By George D. Beatty, M. D., of Baltimore.

In my paper on vegetable staining in the April number of this Journal, copied from *Science Gossip*, I said the only aniline color I had used with success for staining leaves was the blue. The statement was based on the fact that this color did not come out when the leaves were put into absolute alcohol, or into oil of cloves, provided certain brands of these chemicals were used.

I have lately discovered that benzole fixes the anilines when they are used in staining vegetable and animal tissues. It not only instantly fixes any aniline color in vegetable tissues, but also renders them as transparent as oil of cloves.

Finding that benzole possessed this property, led me to try double staining upon sections of leaves and sections of wood. The results have proved highly satisfactory. I have found the following processes successful:—A section, say of wood, being prepared for dyeing, is put for five or ten minutes in an alcoholic solution of "roseine pure" (magenta), one-eighth or one-quarter of a grain to the ounce. From this it is removed to a solution of "Nicholson's Soluble Blue Pure," one half grain to the ounce of alcohol, acidulated with one drop of nitric acid. In this it should be kept for thirty or ninety seconds, rarely longer. It should be frequently removed with forceps during this period, and held to the light for examination, so that the moment for final removal and putting into benzole be not missed. After a little practice the eye will accurately determine the time for removal.

Before placing the object in benzole it is well to hold it in the forceps for a few seconds, letting the end touch some clean surface, that the dye may drip off, and the object may become partially dry. By doing this, fewer particles of insoluble dye rise to the surface of the benzole, in which the brushing is done to remove foreign matter. The object should then be put into clean benzole. In this it may be examined under the glass. If it is found that it has been kept in the blue too short a time, it should be thoroughly dried, and, after dipping in alcohol, be returned to that dye. If a section of leaf or other soft tissue be under treatment, it should be put in turpentine or oil of *juniper*, as they do not contract so much as benzole.

When hæmatoxylon is used instead of magenta, it is followed by the blue as just described. As neither of these dyes comes out in alcohol or in oil of cloves, the section may be kept in the former for a short time before placing in the latter.

The hæmatoxylon dye I prefer is prepared by triturating in a mortar for

about ten minutes two drachms of ground campeachy wood with one ounce of absolute alcohol, setting it aside for twelve hours, well covered, triturating again and filtering. Ten drops of this are added to forty drops of a solution of alum; twenty grains to the ounce of water. After one hour the mixture is filtered.

Into this the section, previously soaked in alum-water, is placed for two or three hours, or until dyed of a moderately dark shade. When dyed of the depth of shade desired, which is determined by dipping it in alum-water, the section is successively washed for a few minutes each, in alum-water, pure water and fifty per cent. alcohol. Finally it is put in absolute alcohol until transferred to the blue.

Carmine and aniline blue produce marked stainings, but they are rather glaring to the eye under the glass. I use an ammoniacal solution of the former, double the strength of Beale's, substituting water for glycerine. In this a section is kept for several hours. On removal it should be dipped in water, and then put for a few minutes in alcohol acidulated with two per cent. of nitric acid; then in pure alcohol; then in the half grain blue solution before spoken of, from which it should be removed to alcohol; then to oil of cloves. Much color will be lost in the acid alcohol. The acid is to neutralize the ammonia, which is inimical to aniline blue. Magenta aniline or hæmatoxylon may be used with green instead of blue aniline. The brand of green I prefer is the iodine brand, one grain to the ounce of alcohol.

Double stainings of sections of leaves in which red is first used have the spiral vessels stained this color, other parts being purple or blue. Radial and tangential sections of wood have the longitudinal woody fibres red, and other parts purple or blue.

This selection of color is, I think, due to the fact that spiral vessels and woody fibres take up more red than other parts, and are slower in parting with it. The blue, therefore, seems first to overcome the red in parts where there is less of it. It will entirely overcome the red if sufficient time be given.

If the blue be used before the magenta aniline, the selection of color is reversed.

I would here call special attention to the importance of examining these stainings at night, as the red in them has a trace of blue in it which does not show at that time, but comes out so decidedly by daylight, as to change, even spoil, the appearance of the specimen.

I think they should be mounted in Canada balsam, softened with benzole, as the presence of the latter may be beneficial in preserving its magenta.

I would offer a few words upon section-cutting, and upon preparing sections for dyeing.

To cut a thick leaf, place a bit of it between two pieces of potato or turnip, and tie with a string. Cuts may be made along the midrib, or across it, including a portion of leaf on either side, or through several veins. Fine shavings of wood may be used, or pieces rubbed down on hones.

Sections of leaves may be decolored for staining by placing for some time in alcohol; but I would recommend the use of Labarraque's solution of chlorinated soda, for twelve or twenty hours after the alcohol. Especially do I recommend the Labarraque for all kinds of wood. In twelve hours wood is generally bleached; too long a residence in it will, however, often cause it to fall in pieces.

After removing from the soda, wash through a period of twelve or eighteen hours in half a dozen waters, the third of which may be acidulated with about ten drops of nitric acid to the ounce, which acid must be washed out. Next put in alcohol, in which sections and also leaves may be kept indefinitely, ready for dyeing.

Before closing this I would add a few suggestions concerning leaves not contained in my January article.

Magenta, when used for them, should be of the strength of one-eighth or one-quarter of a grain to the ounce of alcohol, and purples and iodine-green two or three times as strong. These anilines are inferior to the blue in bringing out all the anatomical parts of a leaf, including the beautiful crystals so often met with. On removal from the dye, leaves should be thoroughly brushed with camel hair pencils.

One weak, instead of forty-eight hours, is frequently required to effect fhe decoloration of large leaves in chlorinated soda, even when they are cut into several pieces, which is advisable.

Mr. L. R. Peet, of this city, whose stainings in aniline are unsurpassed for beauty, thinks better results are attained by commencing with a weak dye, say from one-twentieth to one-twelfth of a grain, and slowly increasing the strength of the dye, at intervals of from one to three hours, until the required hue is obtained. This process certainly guards against too deep staining, and may give a finer tone to leaves under the glass.

WENHAM'S REFLEX ILLUMINATOR.

By Samual Wells, Esq., Boston, Massachussetts.

Last September I received this ingenious illuminator from London, and examined several slides with its aid. The beautiful effect of a bright and clear illumination of the object, shown on a dark back-ground, as described by the inventor and by Mr. Slack, was very interesting and instructive. I had then but few slides on which I could use it, and laid it aside for further investigation at a future time.

Mr. Wenham describes it in the *Monthly Microscopical Journal*, vol. vii. p. 236. It was designed for the illumination of such objects, mounted dry, as adhere to the surface of the slide, by rays of light of such obliquity that they cannot be transmitted beyond that point. The illuminator being connected with the slide by a film of water, the light passes through to the upper surface of the slide, and, if there is no object in contact with the slide at that point, is totally reflected. If, however, a diatom or other object rests on the slide at the point where the light strikes, the rays enter the object and are diffused by it so that it becomes in effect self-luminous.

This appears to be the only use for the illuminator described by the inventor. I have, however, lately used it for a different purpose, and with results quite surprising. While studying high-power objectives of large angular aperture, I experimented with various methods of illumination, and among others applied the reflex illuminator. I find that some immersion objectives are capable of transmitting the extremely oblique rays, that pass through the illuminator so as to give a bright field, when used on balsam slides. In dry mounts the light cannot be transmitted beyond the upper surface of the slide, but in balsam-mounted slides the light passes to the upper surface of the cover and is there totally reflected. If an immersion objective is adjusted and connected with the cover by a film of water, the total reflection will be destroyed, and the light pass through the cover and water into the front of the objective. The ultimate direction of the ray of light after passing through the illuminator is not changed by the introduction of the different media (balsam, glass, and water), and the angle at which it enters the objective must therefore be greater than 41°. In examining Moller's *probe platte*, a balsam mount, under these conditions, with

light from a kerosene hand-lamp, I easily resolved the *amphipleura pellucida*; so clear and decided were the lines that with a power of 8000 they were still visible. I first obtained this unexpected result with my Powell and Lealand 1-16th, and the light was sufficiently bright to render it possible to use a one-half inch eye-piece and concave amplifier. As the 1-16th has the power of a 1-20th, I obtained, by estimation, a power of 8000 diameters.

The resolution of this difficult diatom, as well as the *frustulia saxonica* and *nitzschia curvula* (Nos. 18 and 19 on the *probe platte*), far surpasses any that I have ever seen by artificial light, and rivals the beautiful resolution obtained by monochromatic sunlight. With this illuminator it is much easier to resolve the *amphipleura* in balsam than to resolve it dry with any other artificial illumination.

I find, however, as yet but few objectives capable of transmitting light of such extreme obliquity through the back systems. The Powell and Lealand 1-16th, as I have above stated, succeeds admirably. My Tolles' 1-18th immersion gave only a dark field.

Of several others I have succeeded with only three: a 1-10th made several years ago, a four system 1-6th, and a four system 1-10th, the last two of recent construction, and all three made by Tolles, and all of course immersion. I have not had access to continental objectives of wide angle. The three objectives of Tolles last named resolve the whole of the frustule of the *amphipleura* at once, while the Powell and Lealand 1-16th resolves only a part at one view, even when the whole frustule is in the field. The advantages of the reflex illuminator in thus furnishing light of greater obliquity than has been obtained by other methods seem to me worth considering by those interested in testing the resolving power of objectives.

I find it advantageous to connect the illuminator with the slide by glycerine, instead of water, as it does not evaporate. The higher refractive power of glycerine makes no difference in the ultimate direction of the light.

With high amplification the lines of the *amphipleura* become decidedly beaded, but do not separate into dots.

SAN FRANCISCO MICROSCOPICAL SOCIETY.

The regular meeting of the San Francisco Microscopical Society was held in its rooms on Thursday evening April, 22; President Ashburner in the chair. In addition to a very full attendance of members, Professor Wm. H. Brewer of New Haven, J. B. Bond of New York, Dr. J. N. Eckel, Dr. Henry Terrer, Dr. Murray More, D. J. Staples, H. L. Hosmer and W. N. Lockington were present as visitors.

The Secretary announced the receipt of the April number of the *Cincinnati Medical News*, containing valuable microscopical items; three numbers of the *World of Science*; and from Mr. R. H. Ward, the "Rules of the American Postal Micro-Cabinet Club," with a letter desiring that a Circuit be organized on the Pacific Cost. Messers. J. H. Carmany & Co. donated the May number of the *Overland Monthly*, and Dr. Harkness presented a printed copy of his paper read before the Sacramento Society for Medical Observation, in April, 1868, regarding Salisbury's Ague Theory, which is a very interesting article to all microscopic botanists, and controverting the theory advanced. Mr. H. Edwards presented ten papers of a series on "Lepidoptera of the Pacific Coast."

To the object cabinet, Mr. W. H. Walmsley, of Philadelphia, donated

twelve beautiful slides, mounted with the following objects, viz: Scales of lepisma saccharina, wolffia, columbiana, fertile frond of maiden-hair fern, fertile frond of lygodium palmatum, coccinella, spinnerets of garden spider, American podura, culex (male and female), head and tongue of horse fly, gizzard of cockroach for polariscope, and ovipositor of saw-fly.

Mr. W. G. W. Hartford donated seven slides, mounted with rhabdomena arcuatum (Scotland), aulacodiscus scaber, gyrosigma spencerii (New York), guano (Gulf of California), diatoms from San Francisco. transverse section of Indian corn, and wool from the Cape of Good Hope.

Mr. H. G. Hanks donated a slide mounted by him with a section of magnesian rock from Healdsburgh, and a number of seeds of paparium somnifera from Turkey, the peculiar marking of the latter being interesting and making a beautiful opaque object.

Mr. C. G. Ewing donated a slide mounted by him with the palate of a land mollusc (Arion).

Mr. C. Mason Kinne donated four slides mounted by him with tingis hyalina, obtained by Mr. Edwards from Calaveras county, Cal., and which proved to be a most beautiful object, the entire upper portion of the insect being covered with a curiously woven network of glassy appearance; the very remarkable egg of a California butterfly, polyommattus xanthoides, and the cell structure of the pith of elder. The fourth slide was mounted with what was claimed to be worms taken from diseased teeth, and in presenting this slide Mr. Kinne read a short paper, which explained the matter, and is given in full.

WORMS (SO-CALLED) IN TEETH.

To the student in microscopy, who feels a just interest in original investigations—original at least so far as relates to himself—there is always a field, wide and extended, which waits his attention, yet oftentimes, after careful and patient study, the application of tests and comparison with the obtainable results of others, he finds what is apparently new to have been looked into and treated just as carefully by some plodder before him. To my mind, the time spent in such cases is never lost, and the satisfaction found in obtaining definite results by microscopical analysis, is materially enlarged if found to agree with deductions of others unknown at the time.

Whether the slide I present this evening, mounted as it is with objects which seemed to demand more than a cursory examination when brought before me, will prove to be new or not, remains to be ascertained, and for that purpose and to give the members of the Society the information I have obtained, that they may, if needs be, pursue the matter further, I make these statements.

A gentleman, well known for his genial qualities as a pioneer, his executive ability as an underwriter, and his desire for the advancement of science in a general way, suffering from an intolerable neuralgic toothache, casually learned of a person who declared, unhesitatingly, that the affliction could be removed, when proceeding from diseased teeth, without the use of the dentist's cruel forceps and loss of servicable molars. The printed advertisement of this philanthropist, read as follows:

"TOOTHACHE CURED WITHOUT PAIN—A PERMENANT CURE IN FROM SEVEN TO TEN MINUTES!—I use a steaming process, with a purely vegetable matter, that can be eaten without the least harm. I can convince any one having the toothache, by relieving the pain in a few minutes, and showing them the worms on the receiving iron as they drop from the teeth. I have taken as many as thirteen worms from the teeth of a single person. I am no doctor, and do not pretend to cure but this one thing. I have cured a great many, but never charged anything up to the present time. No cure, no pay!"

Suffice is to say, in the spirit of despair a trial was made, and after allowing the smoke from a quantity of the medicine, placed on a heated iron, to enter the mouth by means of an inverted funnel, some twelve or fifteen worms (so-called) were found attached to the inner side of the funnel, and handed to me for investigation, which resulted as follows:

The objects, which certainly appear to the casual observer much like round, white worms, average one-fourth of an inch in length and one-thirtieth in diameter, with a tough integument quite regularly striated longitudinally. Its substance is of a waxy consistency and somewhat moist. Treating the "worms" with heat, water, ether, liquor potassæ; nitric and sulphuric acid, benzine and "Millon's test," brought out various results. The cell structure was plainly shown in several instances, and I exhibit herewith drawings from the microscope, of the same.

Without entering into details, the invariable result of each of the tests made was conclusive, and I feel certain that there is no animal matter in the "worms;" but that the objects are a peculiar formation arising from the substance used for the cure, which is the secret of the owner and jealously guarded.

There can hardly be a doubt but that the object is entirely of vegetable origin, and from the shape and reticulation of the cells, cannot be of fungoid growth, and never had anything to do with diseased teeth. Whether this fact will detract from the permanent result in those cases where the pain has been allayed by the smoke or steam from the substance, remains to be seen.

C. Mason Kinne.

April, 22, 1875.

The object and drawings of its cell structure were observed with interest, which was much enchanced by a verbal statement from Dr. Harkness, who fully confirmed the deductions of Mr. Kinne, and stated that some years ago he had studied the phenomena, arrived at the same conclusions, and having an opportunity to carry the investigation still further, ascertained that the remedy used was onion seed mixed with butter, which on the application of heat caused the germ to separate from its investment and lodge against the damp sides of the funnel; and further stated one essential point to be, that the patient should be convinced that there were worms in the teeth, so that success depends upon the credulity of the subject of the experiment.

Mr. Henry Edwards donated twelve additional specimens of the tingis hyalina taken from the flowers of the cœonothis, mammoth trees, Calaveras county, California; two specimens of parasite from the chrysalis of a species of brassolis, Panama; and a gordius, class entozoa, from Colusa, California, which was accompanied by a paper giving a technical description of the characteristics of the genus; and if, as suggested by Mr. Edwards, this be a new variety, a careful study of its habits, life history and microscopic examination, would furnish the material for a very valuable paper.

Dr. Harkness, who has just returned from a short trip to the Sandwich Islands, exhibited several slides representing different phases in the life history of the blight which is believed to have been the cause of disease in the coffee plant of those islands.

The Doctor was unable to obtain, at the time of his visit, any coffee leaves which were afflicted by the fungus, but brought with him several leaves of the guava plant, which were infested with a blight, said to be identical with that found on the coffee tree. These specimens belong to the genus hyphomycetes, which appears upon the upper surface of the leaf as a black mould, and is a true fungus, the mycelium forming a network over the surface of the article and its filaments dipping downward into the

cell beneath. From the surface of the mycelium, aerial hyphæ are thrown off in branches, made up of globose cells, adhering to each other, sometimes rising in a single stem, in others, dividing into two or more branches. From these branches arise, on the one hand, a capsule (*sporange*), with its cluster of stylospores, and on the other spermagonia, with imprisoned spermatia. The slides exhibited showed different portions of the plant, and proved that it was not the coffee blight—hemileia vastatrix—which proved so injurious in the island of Ceylon.

The Doctor also exhibited a specimen of confervoid algæ, the œdogonium, from Saucelito, and explained the marvelous manner of the formation of its pores; also from the same locality the filaments of zygnema cruciata in a state of conjugation. His lecture was listened to with interest, and was made plain by diagrams on the blackboard, at the conclusion of which he was requested to speak of matters of microscopical interest which fell in his way at the islands.

Among them he mentioned that of the organization of the Royal Microscopical Society of Hawaii, and which, from the interest manifested by its members, will prove an adjunct to science, while it and our Society, its nearest neighbor, can maintain an intercourse to their mutual advantage.

After the unanimous adoption of the following, the meeting adjourned:

Resolved, That the thanks of the San Francisco Microscopical Society be tendered to Dr. Adolf Barkan for his interesting and instructive lecture on the "ophthalmoscope" at the last meeting, and that the trustees be and are hereby authorized to extend to him the privileges of the rooms and apparatus for one year.

The regular meeting of the San Francisco Microscopical Society was held on Thursday evening May 6, with a large attendance of members and the following visitors: John H. Caswell, of New York, a corresponding member; John W. Young, Salt Lake City; J. M. Redway, Placerville; S. B. Christy, Berkeley; Henry Taylor, M. De Kirwan, Chas. G. Yale and Arthur Hayne, of this city.

Under the head of donations the library received many important additions, among them being four numbers of the *Monthly Microscopical Journal*, April number of the *American Naturalist*, and three scientific works entitled "Fungi, their Nature and Uses;" "Chemistry of Light and Photography," and "Nature of Life."

Dr. Christopher Johnson, of Baltimore, donated material for mounting, in the way of spicules of euplectella speciosa, rosette form, and ter-oxide molybdenum for the polariscope.

Mr. D. Mason Kinne presented two slides mounted by him with diatoms, *isthmia nervosa*, Cliff House beach; and seeds of paparium somnifera.

Letters from Drs. C. Johnston, R. H. Ward, J. A. Thacker, Messrs. Eugene Bourgogne and J. Edwards Smith, were read, each containiug matters pertaining to microscopy, and evincing interest in our Society, after which Mr. H. G. Hanks placed on the table his spectroscope, and proceeded to make a few remarks relative to the construction and use of this instrument. His remarks were devoid of technicalities, and with the use of the blackboard he made the subject quite clear.

After showing the characteristic absorption bands of various colored solutions, the spectra of flames in which different substances were volatilized were shown, and their beauty and fixed position noted.

Perhaps there is no single discovery of the last quarter of a century of so much scientific interest, and which has enabled the educated observer to learn of the constituents of bodies unapproachable, as the spectroscope,

and, combined as it now is with the microscope, the student in spectrology has a wide field for original and interesting work.

After an announcement by the President that the annual reception of the Society would be held in Mercantile Library Hall some time during the last week of this month, the meeting adjourned.

FAIRMOUNT MICROSCOPICAL SOCIETY OF PHILADELPHIA.

The regular monthly meeting was held May 20, on West Green street. The subject of the evening was *micro-fungi*. The secretary, Mr. Stevenson, read a paper on the subject, and illustrated it with a series of slides of æcidium, puccinia, aregma, triphrogmium, uredo, ustilago, tuchobasis, etc. Drs. Griffith and Shakespeare opened a very interesting debate on the subject of "the fungoid origin of disease," which was freely discussed by Dr. James, Mr. Gray, and the other members present. The evening was spent very profitably to those present, and was pronounced by all to be one of the most enjoyable held this year. A vote of thanks was unanimously tendered Mr. D. S. Holman for his fine exhibition of the gas microscope at the meeting in February last.

This Society grows in interest and numbers, and is fast becoming a permanent organization.

MEDICAL GLEANINGS.

WHAT WE SAW AND OVERHEARD.—The following from an exchange will apply to this climate. By a complication of circumstances, which it is needless to explain, we could not help witnessing the following little scene in a doctors office. It is nothing derogatory to our own personal honor that neither the physician nor his patient was aware of our presence—the manifestation of our whereabouts being strictly impracticable at the time.

Dr. Eider-down was sitting in an easy chair by his stove reading a *New York Weekly*. "Beecher-Tilton," "Vic. Woodhull," "Bessie Turner," "Free Love Items," etc., constituted the principal relief-captions of the page he perused. Still, Dr. E. is no fool, and we do not know that he has an essentially prurient imagination, for we are acquainted with fine ladies who pursue Beecher-Tilton literature to its ultimate ramifications.

The music of a feminine foot-fall caused the doctor to look up, and a moment after he was doing a Chesterfieldian bow to a pretty and very modest looking young lady.

Dr. E. can execute the most stunning dip thinkable, while his linguistic effusiveness is a saccharated miracle.

Miss Jennie, for it was she, accepted the blandly proffered chair, and proceeded immediately to business.

Her great toe had been paining her beyond finite tolerance for the last three days—this in a hurt though extremely silvery tone.

The tone aforesaid, so antithetical to the toe, before mentioned, disconcerted the doctor for a moment, but he rallied quickly and said:

"Are you regular in your menses, Miss?"

"Perfectly," said Jennie, blushing violently. "The pain is mostly in the middle joint."

"Have you any leuchorrhea?" asked the doctor.

Jennie looked dazed.

"I mean, have you any whites?" explained he.

"Oh no," timidly, "the whole trouble is in my great toe."

"Do you not sometimes feel a heavy, dragging sensation at the bottom of your bowels?" queried the doctor.

"Never," said Jennie, with some emphasis, "the whole difficulty is in my great toe. The pain is sometimes sharp, and—"

"But," interrupted her medical adviser, "think, Miss, haven't you experienced difficulty in making water at times?"

"No, sir," retorted Jennie, in evident anger, "my *toe* hurts me, and if you will not prescribe for me I'll go to some one who will."

The doctor corrugated his brow, put on an injured air, and summoning the vocal mien which is distinguished for dramatic mouthings and trilled r's, said:

"Your manner convinces me, Miss ——, that you misinterpret my questions. Perhaps I ought not to blame you, for you are young; you are ignorant of the first principles of pathological science. To your simple mind, there seems to be no direct connection between phallangeal articulations and the genito-urinary apparatus. The central irritation which may be a causative element of pain or spasm in a remote part, is not logically possible to the unlearned, uninitiated layman; I can, therefore, comprehend and forgive your manifestations of impatience;" and the doctor smiled emolliently.

"You are a woman, Miss —, and as such you have a uterus. The human matrix is the nidus of every known disability peculiar to your sex. Irrelevant, therefore, as my questions may have seemed to you, they have a direct bearing upon the probable cause of your distress. If you had scientific ears, I could doubtless elucidate the nature of your malady, to your perfect satisfaction. Being unlearned in these recondite matters, it is your manifest duty to defer to my educated judgment, and accept my dicta in this case without question;" and the doctor smiled an occult smile.

"From the prominent symptom named by you—excruciating pain in your great toe—I am convinced that retroversion, endocervicitis or procedentia is at the bottom of the whole trouble, but it is past the skill of man to diagnose the precise difficulty without (now do not be shocked Miss —), without—an examination;" and the doctor smiled persuasively.

Jennie's common sense and the strength of her native purity were too much for the charlatan's learned twaddle, so she gathered her skirts about her, and with the single remark, that she'd die rather than submit to such indecency, she departed, and thus was Dr. E. cheated out of the exquisite privilege of scorching a virgin uterus.

The educated gynœcologist, is of all men, the most active execrator of the professional womb-destroyer. He loathes, with a sulphurous energy, the medical prostitute, who reaches the acme of his ambition only when he reaches the apex of a uterus; and because of the ravages of these genital rodents, and the odium cast upon decent medicine and surgery by their brassy exploits, he is actually chary in suggesting needed examinations. Pardon us dear reader but Dr. Eider-down is not an educated gynœcologist.

The competent and honorable practitioner of general medicine despises the morbid vagina delver with a lurid vehemence that is scarcely discounted by the hate of the legitimate gynœcological specialist. He has reason to, for about every examination he is *forced* to make reveals to his pitying eyes the charred and scarified havoc which paves the hellward track of these nether-end barnacles.

Permit us, dear reader, to inform you that Dr. Eider-down is not a "competent and honorable practitioner of general medicine."

There is in our midst a class of mediciners (half-breed bastards) who affect gynœcology (great God!) as their principal specialty. They do this

partly from salacious impulse (maledictions blister them) and partly for the money there is in it. These fellows (dessicated be their bones and withered their testes) always append something like this to their cards: "Special attention given to female diseases."

Reader, Dr. Eider-down constitutes a unit of the last described class.

CINCINNATI HOSPITAL.

JONES STATION, O. MAY 25, 1875.

HON. M. B. HAGANS, *Member of the Board of Trustees of the Cincinnati Hospital:*

DEAR SIR:—The concluding paragraphs in a communication addressed to you, and published in the last number of the NEWS, were not intended to reflect on Christianity, but to develop the fact that an individual occupying a high place in the Christian Church, and as a private citizen noted for his exemplary Christian character, may, under circumstances such as surround your board, be guilty of acts of gross injustice, and remain exempt from censure because he professes to belong to the household of faith.

Is there, in the Christian code, a section or a clause which gives you license to violate, when acting with and as one of the board of trustees of the Cincinnati Hospital, any principle of justice? In this respect are you permitted to do that which is unlawful to be done by the private citizen. Do you not hold the one seventh part of the power which controls and has made the history of the hospital, and are you not responsible to that extent for every act passed by your board which gains your approval or fails to receive your protest? Can you participate in acts of gross injustice and remain guiltless? Is a wrong less a crime or less odious when perpetrated by the joint action of a number of persons than it would be if committed by one individual? Is the Golden Rule for those only who have no official trust to administer? Are you not bound in your official acts to practice that righteousness which exalts a nation? Let me invite your attention to the circumstances which placed on duty the house physicians now serving the hospital. The staff recommended them on the result of an examination. Was the examination more than a review of a few subjects to which the attention of these gentlemen had been specially directed by members of the staff, while in the wards of the hospital, at a cost to the student for the benefit of the staff of five dollars per month? Did not the money paid your staff do more towards procuring the places in the hospital than their knowledge of medicine as developed at the various interviews with your staff absurdly called an examination? Certainly it was not an examination in which the students from all the colleges in the city could enter on a level, and compete for place as had been announced it should be. In this sense it was an insult to the profession of the whole country.

Right here notice the antagonism between the law and the action of your board. The law says the staff shall serve without compensation. Your board says, tacitly at least, that your staff, for the sole benefit of its members, may charge college students five dollars per month, or twenty-five dollars per session.

Please examine the history of that dispensary, which was ostensibly established to take care of the out-door poor, and note the attempt by the master spirits of your board—and, too, without authority of law—to make it a part of the hospital; and for no other apparent purpose than to enable a few dear relatives and friends of your board and your staff to rise into professional notice. You will remember an injunction was threatened,

after which, the action of your board on this subject was rescinded. Will you not also examine the circumstances which culminated in the repeal of the rule excluding and making ineligible to the hospital staff all medical college professors, and then the appointment of a representative from two college faculties, leaving the third one without any such appointment, though equally worthy to receive it? In this connection will you recall the mission of your colleague, Mr. Mayer, to Columbus, who assumed to speak for your board after the manner of "thus saith the Lord?" Mr. Mayer, on that occasion, as you must know, did promise while thus acting that your board would keep the college faculties equally represented on the staff of the hospital.

Now, what I ask of you and your board is, that you shall manage the hospital within the provision of law, make good this promise, and keep it faithfully. Do this, and criticisms on the management of the hospital will not appear. Fail to do it and month after month, as the years roll away, your record, ghost-like, will rise up and confront you.

In conclusion, let me exhort you to so refresh your memory that you can recall the essentials of the Divine code, and compare them with the history made for the hospital by your board. Read this code, my Christian Brother, and compare its requirements with the unrighteousness practiced by your board, as seen in the unlawful acts, the favoritisms, the partialities, proscriptions, betrayals, and nepotisms of which it is guilty. No one can read the history of the Cincinnati Hospital, who loves righteousness and has the fear of the Lord before his eyes, and fail to weep on account of the depravity of the human heart. R. C. S. Reed.

Book Notices.

The Histology and Histochemistry of Man.—A Treatise on the elements of composition and structure of the human body. By Heinrich Frey, Prof. of Medicine in Zurich. Translated from the fourth German Edition, by Arthur E. J. Barker, and revised by the Author, 608 engravings, 8 vo., pp. 683. 1875. New York: D. Appleton & Co. Cincinnati: G. E. Stevens & Co.

The work of Heinrich Frey is regarded the best work upon which it treats of any heretofore published. Besides translated into English, it has been translated into French, and has passed through four editions in Germany. These facts speak more highly in its praise than any thing we can say.

All the knowledge that can be acquired of human structure, by the unaided eye, has probably been already gained, but there is a much richer mine beyond, which is being diligently worked by the aid of the improved instruments of the day. In the work on our table, we have spread out the results of the labors of observers to the present time by means of the microscope, chemistry, etc., etc.

The work is divided into three divisions. In the first is considered the matters of which the human and animal body generally is composed, with their histological and their physiological characters. In the second the various tissues, in their anatomical relations and composition, are brought under notice. The third division is devoted to the consideration of the more minute structure of the organs and systems of our body, or the manner in which they are put together out of different tissues.

Some of the matters contained in the work will be brought before our readers in future issues of our journal.

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Original Contributions.

THE OBSTETRICAL FORCEPS.

Read before the New Jersey State Medical Society. By John V. Schenck, M. D., of Camden.

My choice of the obstetrical forceps, as the subject for an essay, may be easily explained.

A friend in adversity we love, and one who has lent us a helping hand when all nature seemed arrayed against us, of such we love to speak. The city I represent is a rapidly growing one. The population is made up, in great part, of those who have recently ventured upon the matrimonial sea; who instinctively obey the injunction, "multiply and replenish." Obstetrics, therefore, is one of the chief demands upon our profession. In an emergency of this sort it becomes us, as far as possible, to facilitate the effort of nature in bringing to a successful issue this result of conjugal union. The obligation to do all in our power to shorten the duration of human suffering, is doubly intensified by the fact, that it is upon lovely woman the condemnation has fallen, "in sorrow shalt thou bring forth children." He who can stand by the couch of suffering, and lend no helping hand, when relief can be given with entire safety to both parent and offspring, is unworthy of the God-like profession he dishonors.

To the inventor of the forceps the profession of our day should sing pœans of praise. The invention is due to the earnest appeals of suffering woman for help in her hour of utmost need, and the response shows that the nobler traits of man's nature were not appealed to in vain; science has woven no brighter chaplet for her votaries than the one that adorns the brow of Chamberlain; and to woman no greater boon has been given.

Its proper use shortens the duration of labor, and saves woman from long periods of suffering and suspense. It obviates sloughing and retention of urine, the sequel of tedious labor, and also saves her from the exhaustion consequent upon long continued superhuman expulsive effort. The advantages that accrue to the use of the forceps do not rest with the mother alone, but the offspring shares in the blessing. Multitudes are saved by its proper use, who otherwise would have gone to swell the hecatombs of victims to embryotomy and incompetency. The attending physician is appealed to in his individual capacity. He has arduous duties to perform, his patients await his coming anxiously, and his attendance is often a matter of vital importance. The physician himself is weary with watching and waiting. He is master of the situation, and shall he stand "all the day

idle?" Science and prudence both answer the question—apply and deliver. The vis medicatrix naturæ is the keystone in the arch of therapeutics. To strengthen and assist is the great aim of the practitioner of medicine. He does not stand idly by and see nature almost in the throes of dissolution, but takes advantage of the least opportunity to skillfully aid in arresting the inroads of disease. In obstetrics, also, it behooves the practitioner to stand ready with artificial means to facilitate the effort of nature in the progress of parturition. A resort to the obstetrical forceps, in cases otherwise unmanageable, is a foregone conclusion.

I do not wish to stultify myself by appearing as an advocate for the forceps, when its imperative use is acknowledged by all. I wish to advocate for the instrument a wider field, a more extended usefulness.

We see cases, otherwise impracticable, accomplished with safety to both parent and offspring, by the use of the forceps. If such is the case, does it not follow that difficult, lingering cases could be facilitated and consummated by their timely use, and with the utmost safety to all concerned.

I wish to urge upon the profession the propriety, and, indeed, the obligation due our patients, in this the hour of woman's utmost need, to shorten the pangs of labor, and to hasten the ecstatic joy which often finds expression in the words "if there be a heaven on earth, it is this, it is this." We appreciate the services of the forceps when it is the "sine qua non." Let us also add to its credit by resorting to its use in overcoming obstacles that retard the process of parturition. I know there are those who meet a proposition of this kind with the cry of "meddlesome midwifery." The same persons, in case of breech presentation, when once the feet are down, do not hesitate to make traction upon the legs with all the strength they have. Neither do they abstain from the use of ergot, but press it in heroic quantities, although they know that death to the offspring and exhaustion to the mother are in the cup. I say to such, let them sit with index per vaginam until they get what they deserve, per vias naturales.

I have implicit trust in nature, and in humility strive to learn her laws, and by artificial means strive to assist the natural mode of delivery; by so doing, the satisfaction is given of lessening the suffering of humanity, and of hastening the moment of ecstacy when the mother feels, for the first time, her first-born's breath.

Ninety-five per cent. of all cases of obstetrics may be set down as vertex presentations; ninety per cent. are vertex anterior, five per cent. vertex posterior; the balance are breech presentations. The irregular presentations only serve to strengthen the general rule. One-half of these vertex presentations can fairly be facilitated by the use of the forceps, and that too with advantage to the mother, and very often to the offspring. If any delay in the delivery occurs, be the cause what it may, a proper application of the forceps, and a judicious use of them when applied, will tide the patient to a safe and happy delivery. A wide field is then open to the obstetrician for cautious and humanitarian effort.

At this juncture it will not be improper to speak of the kind of forceps that seems to meet all the indications.

The long forceps of Hugh L. Hodge, or what is known as the Philadelphia forceps, has no superior. Modifications of this instrument meet some exceptional cases. Dr. Bethel, of Philadelphia, modified the instrument of Professor Hodge by slightly increasing the curve of the blades and narrowing the fenestra. The modification is a decided improvement in the management of some cases. We are not disposed, however, to discuss the merits of any particular forceps, only to praise the bridge that carries us safely over.

In the first, second and third periods of the second stage of labor, the forceps come, in to fulfill its part in the facilitation of parturition. The detention of the head of the child at the superior strait, after the full dilation of the os, is often of long duration. The diameters of the pelvis of the mother and head of the child may eventually correspond, and nature may succeed in the delivery. Our waiting, however, often sacrifices the child, injures the tissues of the mother, and exhausts her strength. The moulding process, so tedious and destructive, if left to nature, can readily be accomplished by the forceps. A little traction, assisted by the vis a tergo of the uterus, soon brings the head into the cavity of pelvis, and facilitates the delivery. We also find, when the head is at the superior strait, a relaxed abdomen, the cause of vexatious delay. The head slips over the superior strait, and can be felt, as it were, striving to make an exit through the walls of the pouching abdomen directly over the pubis. The force of the uterus is spent upon the pubis. The forceps carefully applied soon changes the aspect of the case. The vis a priori supplements the vis a tergo, and conducts the vertex in the way it should go. Bethel's modification of Hodge, with its great pelvic curve, seems especially adapted to this emergency, and is truly the right instrument in the right place.

The administration of ergot at this juncture, if it acts at all, is far more fatal to the child than any proper instrumental aid. If, even after using ergot, a considerable delay occurs, the uterus becomes wearied by over-stimulation, and then uterine inertia is added to the perplexities of the case. You are forced to the use of the forceps, and that, too, with lack often of the mother's expulsive power to assist in the delivery.

In the second period of the second stage of labor in vertex presentation, rotation is often delayed by the powers of the mother not being capable to bring force sufficient to accomplish it. If manipulation fails to assist, then apply the forceps, and a little traction soon tides the labor to a successful issue, and the tissues of the mother are also saved from injury caused by long pressure.

In the third period of the second stage of labor in vertex presentations, when the head has rotated, then may the labor be facilitated by artificial means, with the greatest frequency. How often do we find the powers of the mother unequal to the emergency. The head does not come fairly under the pubis. The dynamics of the mother are at fault; now is the time for expulsive pains, but her strength begins to succumb to the tax upon her; ergot may tide the case through to a successful issue, but to an organ already wearied by long effort, it will only add a few expulsive throes, and then leave the inertia more profound than before. The forceps now comes in beautifully. No difficulty now in enclosing the parietal protuberances in the fenestra, and then by compression, traction, and elevation of the handles, you soon announce the gratifying information that the head is delivered. Thus, in moments instead of hours, the labor is consummated and the happiness of the mother complete.

In the third period of the second stage of labor, a condition of this sort often occurs: The sphincter vaginæ refuses to dilate, and the vagina elongated into a cul de sac, made by the dilated perineum protruding beyond the symphysis pubis, the head of the child seems in doubt whether to make an exit through the sphincter ani or the sphincter vaginæ. The application of the forceps in this emergency and the elevation of the handles over the abdomen of mother, speadily lifts the head from the receptable and consummates the labor.

In my estimation, the forceps, judiciously used, will no more endanger the perineum than it is endangered by the head of child. I am convinced,

indeed, that with the forceps applied and the head of the child distending the soft parts, that we can better graduate the pressure of the head on the perineum, and save it from laceration, than we can without them.

The utmost caution and self-possession at this juncture we all know to be essential. This is the case especially with primiparæ, and our motto must always be "festina lente."

The experience of the practitioner of medicine finds constant peculiarities in labor, that urge upon him the propriety of the early use of the forceps.

Labor may occur in cases of paraplegia. We do know that paraplegic patients have safely delivered themselves, and we do know that the uterus has expelled its contents after death. In cases of this sort shall we, like Macawber, wait for "something to turn up?" In cases of this sort it is due the patient, the child, and yourself, to deliver at once.

Cases of uterine inertia are met with occasionally to perplex, annoy, and exhaust; labor comes on in fitful paroxysms, and continues just long enough to raise hopes of early consummation. Days are sometimes consumed in the accomplishment of the first stage. Then the uterus refuses to respond to any medication you may use to arouse it. Shall we hesitate to apply the forceps and deliver? The forceps applied in utero may arouse its dormant energies; if no response is met with, still go on and deliver by your own unaided efforts, be the case primipara or multipara. It may take hours, but with patience and care you will accomplish it with safety to all concerned.

We are sometimes at a loss to know the cause of detention of a vertex presentation. The diameters of pelvis are ample, and the head of the child corresponds. The head of the child may be at the superior strait, or may be in the cavity of the pelvis, or may be down on the perineum.

The pains are often frequent, and seem about to be expulsive, but with a cry of distress the parturient woman seems to fail to turn them to account. In these cases the forceps will soon solve the mystery. A short cord with an attached placenta interferes with the proper uterine contractions, and so long as the placenta remains attached, so long will the labor be futile.

Two turns of the cord about the neck of the child will often cause the same delay. A condition often occurs of this sort, wherein the life of the child is frequently saved, and the mother spared much suffering by the judicious use of the forceps. I allude to cases where the membranes are ruptured early and the waters drained off. The pains are severe, and the progress of labor slow. The uterine force seems spent in lateral pressure on the child. In such cases great danger accrues to the child. The character of the pressure tends to arrest circulation between it and mother. As soon as the os will allow apply the forceps and deliver, and save life and suffering.

If we note the presentations, we find ninety-five per cent. vertex. In all these cases, if any delay occurs, the forceps will facilitate. If our mission is to modify and remedy human suffering, then should we be up and doing that which is incumbent upon us. Shall we hug the delusive phantom of hope, while our patients are writhing in agony? Have we nothing more to offer, when appealed to for aid, but the confession of ignorance displayed by the old crone whose ipse dixit is, "let nature take her course?."

The unfortunate reputation that too often attaches itself to the forceps is due to the physician who will not familiarize himself with their use, when they are a sine qua non; he has neither the dexterity to apply them properly, nor the coolness or judgment to use safety. It is a material matter, also, to have the patient calm and confident. She can only be so when she knows

you to be self-reliant and reliable; and you can only be so by familiarity and practice. The attendants add also much to the successful issue. If they hold up their hands in holy horror at the mention of forceps, then are your best intentions often thwarted. Familiarize yourself and the people among whom you practice with the use of the forceps. Let both attendants and patients feel that they have a physician who is equal to any emergency that may arise; then, to both doctor and patient, is obstetrics shorn of the greatest part of its annoyances and anxieties.

ON PIGMENT-FLAKES, PIGMENTARY PARTICLES, AND PIGMENT-SCALES.

By JOSEPH G. RICHARDSON, M. D., of Philadelphia.

The present paper is designed to direct attention to what I conceive to be an egregious error, by which several microscopists of acknowledged ability have been ensnared,—namely, a belief in the importance of the "pigment-cells" or "scales" described by Frerichs, of Berlin, as occurring in blood; * of similar bodies found by Drs. Meigs and Pepper, of this city, under like circumstances; † and of the "pigmentary particles" or "celloids" figured by Dr. William Roberts, of Manchester, England; ‡ most, perhaps all of which I assert to be simply and solely *accummulations of dirt* (especially the remains of red blood-corpuscles) in the little excavations on slides in ordinary use.

Such an accusation as this will, no doubt, at first excite astonishment or even ridicule, but of course no sane man would dare to bring forward a charge of this kind without strong evidence in its favor. This evidence I ask each one of my readers to furnish me after trying this simple experiment:

Examine an ordinary *platte*-glass slide microscopically for *dirt-pits* containing brownish-red matter, which may be oxide of iron (the remains of the polishing powders used in its manufacture), or, if the slide has been long in use, old red corpuscles. If there are none already filled up with "pigment," rub in faithfully a little blood, by which means you can sometimes fill the shallow cavities with the debris of the red disks, and so imitate quickly the effect probably often produced in a gradual manner by frequently wiping small quantities of blood over the glass. Lastly, clean off the slide perfectly bright (so as to be sure you leave nothing but artificial *cells* upon it), and examine with a power of 250 diameters.

The bodies you probably find are accurately described by Dr. Roberts as follows: § "Pigmentary particles; these objects deserve a passing notice from the fact that they are frequent, almost constant, if not absolutely constant, objects in urinary deposits, and have not hitherto been described. . . They never exist in such quantity as to form the entire (*sic*) of a visible urinary sediment; they are only to be recognized by the microscope. They appear especially under two conditions—namely, as free amorphous particles and cell-like bodies (or celloids). . . . The cell-like particles have a peculiar appearance, very difficult to explain. They never present an unmistakably cellular character; they appear flat,

* 'Clinical Treatise on diseases of the liver.' Sydenham Soc. Translation, London, 1860, vol. i., p. 320.

† 'Pennsylvania Hospital Reports,' Phila., 1868, p. 108.

‡ 'Urinary and Renal Diseases,' second American edition, Phila., 1872, p. 125.

§ *Op. cit.*, p. 124, *et. seq.*

never spherical. Their outline is generally an oblique ovoid. Within the outline, which is generally of exceeding delicacy and of perfect definition, lie masses of red or orange pigment, exactly resembling the free amorphous particles already described."

Frerichs, after pointing out somewhat similar objects, says* that accurate diagnosis can be made in malarial fever by examining the blood for them, since a few drops "are sufficient to determine the presence or absence of large quantities of pigment."

Drs. Meigs and Pepper report finding pigment particles in the blood of eighty-nine patients; but later these acute observers seem to have had shrewd misgivings respecting their importance, although without feeling satisfied as to their real origin.

My own suspicions were excited years ago by Frerichs's pigment-scales, and experiments on hundreds of specimens of blood from malarial and other cases convinced me of their delusive character.

Very recently, Dr. James Tyson, of this city, while examining in committee some ovarian fluid, pointed out to me several of Roberts's pigment-flakes, and said he had prepared drawings of these bodies for his forthcoming work. His statement naturally led me to a careful and prolonged study of the objects in question, and this in turn forced upon me the conviction above expressed.

Excluding carbon-particles (from the air), which can generally be found in fluids which have not been secluded from the atmosphere, I attribute the peculiar shape of pigment-flakes which Roberts finds so "very difficult to explain" (admirably shown by Dr. Tyson in his plate), to the conchoidal figure of the minute chipped-out cavities in plate glass; which little pits have, indeed, proved veritable pitfalls to unwary travellers over the microscopic field. These same shallow shell-like excavations, before being filled up with dirt, are, probably, Frerichs's "coagula of a hyaline character, which resemble in form" (as they have a perfect right to do) the pigment-flakes, and are also Roberts's "bluish mother-of-pearl" celloids.

Dr. Roberts concludes, "I have been in the habit of noticing these objects for many years, and have regarded them as derivatives of hæmatin, but how they come to assume their peculiar forms I cannot conjecture." With him, I believe them occasionally to be "derivatives of hæmatin," but only by the *rubbing process* detailed above; and I trust that my "conjecture" as to how these hæmatin-flakes "come to assume their peculiar forms" will be satisfactory.

It seems almost incredible that the recorded appearance of these "flakes" in such various and inconsistant localities—viz: in blood, urine, the brain, in tumors, and even in the breath—has hitherto aroused no suspicion of their true nature; and it is only when we remember how few investigators have minds achromatic enough to enable them to see objective facts without subjective coloring, that we can offer a plausible explanation of this remarkable phenomenon. Does not the delusion which, if I am correct, has thus entangled several eminent observers, form one of the most curious episodes in the history of medical microscopy? and should it not serve as a warning to future generations of students?

Nevertheless, being always open to conviction, I hereby challenge any devout believer in pigment-flakes to bring me an honest specimen of urine, or blood from any ordinary case of disease, in which can be demonstrated either pigment-flakes, pigmentary particles, or pigment-scales.

* *Op. cit.*, p. 355.

CONIUM MACULATUM.

By Dr. Charles Baker.

This article, as a remedial agent, was first brought to the notice of the profession by Dr. Stoerck, A. D. 1766. It took a high stand as a remedy of great value in scrofulous affections, in cancer, and in certain forms of cachexiæ, but soon fell into undeserved and unmerited disrepute. The truth is, Dr. Stoerck was a full half century before his contemporaries, and his success with this agent was more owing to his superior skill in its management, whereby its powers became developed, and thus were adapted as means to an end, than to the mere aggregate of powers inhering in the plant. And this is equally true of all other agents. Every one knows that opium is narcotic, and every one knows its approximate dose, and yet one physician will accomplish more with it than another ever dreamed of, and simply because he has a more correct appreciation of its virtues and of its powers. God made the plant, but it is the physician alone who makes of it *a medicine*. If there is truth in the aphorism of Pinel, "that the highest attainment of a physician consists in knowing when *not* to give medicine," it is equally true his success depends upon his knowing *how* to give it in order to the accomplishment of a specific or definite end. We must first know what it is capable of accomplishing, and then ascertain the best mode of administering it in order to the attainment of the object proposed. And still further, it is equally important to learn its proper and appropriate adjuvants, whereby the end proposed is the more speedily and certainly attained. It is on this principle that one physician will accomplish with a given remedy that which another fails to perform, and the odium is often made to fall where it does not belong.

By combination and appropriate auxiliaries, here referred to, I do not mean the conjoining of remedies having opposite or antagonistic powers, as of a stimulant proper with a refrigerant, that the evils of the one may be counterbalanced by the tendencies of the other; nor the senseless and unmeaning aggregation of articles of one class, in one grand conglomerate, as though the efficiency of the remedy, like that of an army, depended upon the *number* of its soldiers; but the combination of articles which contemplate the same ultimate end, and in a certain sense are equally adapted to carry out a common intention of cure. As for example in cases of debility attended with great insusceptibility, and in irritability of the nervous system, capsicum becomes a necessary and fitting adjuvant to quinine; and without it we should fail to develop its tonic power. So, on the other hand, where there is great susceptibility and morbid irritability, opium in some of its forms is essential, as without it the quinine could not be borne, or rather would augment the difficulty. And it is further necessary to state on this point, that conium, in its remedial influence, is not as prompt as cimicifuga or digitalis, and therefore is not as well adapted to the treatment of acute diseases, or the acute stages of certain diseases, as the articles above mentioned, but it will often prove eminently beneficial long after the former have lost their efficiency.

The catalogue of diseases in which conium, by itself and alone, may be regarded somewhat in the light of a specific, is indeed very limited; but where its use is indicated as an auxiliary, or conjoined with other articles in a general plan of treatment, it is very large. And this is equally true of every other remedial agent, the effects of which are not comprehended in a single dose—as with the simple cathartics. Quinine may, and often does,

interrupt the recurrence of a paroxysm of the ague; but if properly conjoined with other appropriate remedies, indicated by the circumstances and peculiarities of the individual case, it will be far more efficacious in accomplishing the cure, and with less expenditure of vital force. This principle of appropriate and necessary combination is too much overlooked in ordinary practice, and more especially in introducing a *new* or *untried* remedy. It is expected to do everything, irrespective of the condition and surroundings of the case, or *nothing*; and if it fails to answer the crude expectations of the novice, the article is at once condemned, and the veracity of the author is questioned. We are all somewhat routinists, and rather prefer articles that produce prompt and positive results. Nor do we think the profession very much maligned by the satire of Moliere, in introducing a candidate for its honors before his examiners. After stating a hypothetical case, they demand of the student to unfold his plan of treatment, or method of cure. The student is made to reply with great promptness, but in very bad Latin—"Venare, vomare, et purgare."* After commending him for his attainments, the learned examiners still further inquire, in case his treatment should fail of the end proposed, what he would do next? With the same promptness the candidate replies—"*re*-venare, *re*-vomare, et *re*-purgare." It is not our present purpose to inquire how far we have improved in our *plan* of cure, although doubtless we have deviated from the mode or means employed.

Conium maculatum is a native of Europe, but has become naturalized in the United States, although it is not very common. Its value as a medicine, it is alleged, is somewhat dependent upon its locality and the condition of the soil in which it grows; and, so far as practicable, it should be obtained from rich, dry soil, in an exposed situation. It is said to be almost destitute of medical virtue in Russia, and to be employed as an esculent by the peasantry. It belongs to the Nat. Ord. of the Umbellifera, and often attains the height of six or eight feet, according to the fertility of the soil and other favoring circumstances. It is the only species found in the United States. It may, however, be confounded with the cicuta maculata, which it much resembles, and with which it was once allied in a common genus. The cicuta is a noxious and most virulent poison. I knew a young man, a student of medicine, knowingly, but recklessly, swallow about twenty grains of the recent root of the cicuta, which he plucked by the wayside, and within less than an hour he was seized with tetanic convulsions, and but for the immediate administration of an active emetic would doubtless have died from its effects. The root was ejected and weighed. Indeed, I know of no more virulent poison from the vegetable kingdom that grows in the United States. The two plants bear a strong resemblance to an unpractised eye, and the stems of each are terete and spotted; but the cicuta is smooth, or simply striate, while the conium is sulcate. According to my general recollection of the plants, the conium is a darker green, and more bushy than the cicuta. Because of their having been at one time united in one genus, bearing the generic name of cicuta, we frequently obtain the ext. of conium labelled as the ext. of cicuta, and as often have it so ordered in prescription; but as there is no officinal ext. of the cicuta, there is at present but little liability of mistake. It would be better, however, to drop the term cicuta altogether, for future investigation may render it expedient to introduce this article also into the Materia Medica, and then serious error might ensue. It was my purpose to institute some experiments in order to ascertain its value as a remedial agent,

* Bleed, puke, and purge.

knowing, from the experiment of my fellow student, that in large doses it was tetanic, and therefore would class with strychnos nux vomica.

The leaves of the plant, gathered when in full bloom, are the most active, and, for private practice, should be preferred. But the whole plant—rejecting, probably, the larger stems—is generally employed in preparing it for commerce. As I have no experience with the dried leaves in substance, nor yet with a tincture prepared therefrom, I simply refer you to the books for further information on these points. I shall confine myself to the preparation commonly obtained from the shelves of the druggist, and known as the "English extract of conium," and as privately prepared in my own practice. As we receive it, or as I prepare it, it is not properly an extract, but an "inspissated juice." At least it ought to be so, for if otherwise prepared is inert and worthless. That alone is of value which is of a dark, deep sea-green color, and retains the odor of the fresh plant. The black, tarry, empyreumatic article obtained from some of our American laboratories has no virtue whatever.

I have prepared it after the following mode: rejecting the main stem, after crushing the plant between rollers, or bruising it in a mortar, we express the juice, and immediately strain through thin muslin, and set the fluid aside. In a short time it will separate into two portions, a bright green flocculent precipitate will settle towards the bottom of the vessel, while a colorless watery serum, retaining however the odor of the plant, will float above, constituting two thirds or three fourths of the entire mass. I do not know the relative value of these two parts as remedial agents. I left this for further experiment, and now assign the duty to others more immediately concerned with the advancement of the profession and its interests. We next carefully decant or draw off by a siphon the supernatant fluid, and in shallow dishes expose it to the direct rays of the sun, or to the vapor of steam, until each portion approaches a pillular consistency, when they are carefully and intimately blended, and if necessary are further inspissated. This constitutes the English extract of this plant, and is the only form with which I am practically familiar. Whether it is more or less narcotic than the tincture I do not know, and which is preferable as a remedial agent I cannot determine.

It is of the extract alone I speak, which in its primary operation is—

I. Deobstruent or alterative, and more elegantly defined by the late Dr. Tally as "adenegic."

II. Narcotic.

In its secondary operations it is very moderately laxative, and in certain conditions emmenagogue.

It is also said to be aphrodisiac, and is prescribed in Germany as a remedy in impotency. Bergius, an author of great credit, says: "Impotentiam virilem sub usu conii curatum observavi, in viro quodam plusquam quodragenario, qui omnem erectionem penis prediderat, postiude tamen plures libéras procreavit."

As a subordinate part of its deobstruent power, it is eminently cholagogue, and perhaps stands in this respect only second to the preparations of mercury in exciting and maintaining the action of the liver. I am inclined to regard its operation as a laxative solely as the result of its action upon the liver in promoting the secretion of bile.

It is also efficiently resolvent in discussing subacute inflammation of a scrofulous or arthritic character.

As a subordinate part of its narcotic power, it is efficiently anodyne, allaying morbid irritability and irritation, morbid mobility, restlessness, and jactitation, where its use is otherwise indicated; but so far as my experience extends it is not hypnotic, nor can it be used for this end.

As an external application, its scalded or bruised leaves will allay pain and discuss inflammation about inflamed joints, or in irritable ulcers; and its reputation as a soothing dressing in cancerous ulcers has never been disputed, nor admitted of doubt.

When taken in deleterious doses, it occasions anxiety about the epigastrium, faintness, vertigo, a sense of fulness or pressure upon the orbits, and *perhaps* convulsions. Its incipient effects as a narcotic are sometimes marked by an increased susceptibility or activity of the brain, such as occurs in the forming stages of delirium tremens, or in insanity. The patient becomes witty, sometimes humerous, and answers questions with piquancy. I have never witnessed any effects beyond this point, and they appear to be transient in duration.

It further accords with my observation that when the extract is given by itself, and in the form of pill, its narcotic powers are more likely to be developed. We know that calomel is more prone to act as a salivant if given in form of pill than in powder, although we may not be able to explain the phenomenon. But when conium is conjoined with stimulants, irritants, or aromatics, its narcotic tendency seems to be materially lessened. During a practice of a quarter of a century, I constantly gave in a mixture (the formula for which I will presently furnish), from five to ten grains of the extract, three or four times a day, without in a single instance producing any unpleasant effects, or discovering anything of its narcotic powers. On the other hand, I have known two or three grains of the same extract given in pill, repeated every two or three hours, occasion vertigo. When it is used as an alterative it must be taken in considerable quantities, and be continued for some time; and unless it can be so managed as to overcome its narcotic tendency, it will fail to accomplish the end proposed. Old Motherly says, quaintly enough, "it agrees with all ages, and every circumstance of patients."

The diseases for which it seems best adapted as a narcotic are—*odontia dolorosa* (nervous toothache), *neuralgia* in its various forms, dipsosis averas (morbid thirst from relinquished habits of intemperance), and bex convulsiva (whooping-cough). In most of the above diseases it may also be employed topically and with great advantage, either by fomentations with the recent bruised leaves, or by moistening the dried herb, or by using the extract in form of a plaster, covering the parts affected.

I do not regard conium as a specific in neuralgia—(there are no specifics, however well adapted an article may be for the relief of a particular malady)—but I have never yet seen a case in which its use has not been of signal service, either in mitigating the violence of the paroxysm, or in diminishing the frequency of their occurrence. I have in those cases given it in form of pill, from two to four grains, to be repeated every two, three, or four hours; and when its influence is manifested, and the proper dose is ascertained, I have usually conjoined arsenic, quinine, capsicum, or nitrate of silver with it in appropriate doses, and as seemed most indicated.

We must keep the patient under the continuous but moderate influence of the article at all times, or until the cure is accomplished, and without apprising him what the appreciable or sensible effects of the remedy are. Let him first complain, if you do not otherwise discover the influence of the remedy, and then fall a little short of its sensible operation, and continue the medicine.

The last case of neuralgia I treated in Cumberland County was neuralgia of the tongue. The paroxysms were of short duration, but of very frequent recurrence, two or three in the space of an hour, and the pain was utterly unendurable. I ordered the patient three grains of the extract

every two hours; but when during the following day he complained of vertigo and fulness about the head, I ordered him *two* grains every *two or three* hours, and succeeded in effecting a permanent cure. When the paroxysms are regularly intermittent, in all cases quinine should be conjoined.

When it is desirable to use this article as an alterative and tonic, I have uniformly employed the formula furnished the class by the late Professor William Tully, of Yale College, and known among his students as the "syrupus conii et ferri sesquoxidi."

℞.—Ext. conii maculati, ʒv.
Ferri sesquioxidi, ʒv ad x.
Syrupi Tolutani, f℥ij ad iv.
Olei cinnamoni,
Olei gaultheræ procumbentis, sing. m. x.
Sacchari officinalis, ℥ij ad iv.
Spts. vini gallici, f℥ij ad viij.
Aqua fontana, q. s., ut fiat mistura Oij.

I have freely prescribed this preparation in all cases where an alterative and tonic effect was desirable, and ever regarded a half ounce or a common tablespoonful as a medium dose, which you will perceive contains four and seven-tenths grains of the extract. I have never seen, even in the most delicate females, incipient narcosis induced by its use. It has ever been my impression that its narcotic power was obviated by the presence of the brandy. I have frequently given the above preparation in one ounce doses, and repeated it three or four times a day as seemed indicated.

I regard this preparation simply as a convenience. It is rather pleasant to the taste, and combines in itself all that is desirable for the easy regulation of this remedy. We may often substitute the sesquioxide of iron for Vallet's mass or the phosphate of iron, or the syrup of the iodide of iron, or the iodide of potassium, or, if desirable to conjoin mercurials, a solution of corrosive sublimate, or in other cases with the solution of the arsenite of potassa.

In the different forms of dyspepsia, I have found this preparation of great utility, and especially where there is reason to apprehend a torpid condition of the liver, or deficient or vitiated secretions in the alimentary canal.

In icterus vulgaris, I have succeeded with this article alone, and have witnessed the icterode hue, under its use, disappear in thirty-six hours. Usually, however, I have premised a single full dose of calomel, when not contraindicated, and then relied upon the preparation above given in rather full doses. In jaundice following upon malarious influence or intermittents, I would avoid the mercurial, and use quinine between the doses, and if necessary sponge the abdomen and region over the liver with a pretty strong solution of the nitro-muriatic acid bath.

It is of great utility in the parabysmata. In parabysma coactum, or enlargement of the viscera following upon intermittents, conium is the most efficient remedy I know of. I have used the formula above given, or have substituted some of the preparations of iodine for the sesquioxide of iron.

In parabysma strumosa, or strumous enlargements of the joints or other viscera, it is of singular efficacy, conjoined as may be indicated with mercurials or iodine and arsenic.

Dr. Sam. B. Woodward, late of Worcester Insane Asylum, reported a case of parabysma schirrosum by conium and iodine. Its value in cancer cannot be doubted. Nothing will soothe the torment of a cancerous ulcer

more effectually than the judicious use of this article. Of its curative power I cannot speak from experience.

In dysmenorrhœa and amenorrhœa it is of essential service. I have frequently substituted in those cases the phosphate of iron or Vallet's mass for the sesquioxide as more efficient, especially in paramenia cessationis (or suppressed menstruation).

In chlorosis the formula above given has proved eminently successful, and seemed to meet all the indications involved in the treatment.

In ophthalmitis strumosa, conium and iodine are of singular utility, and especially in the subacute stages. The cure will be greatly expedited by the local or topical application of the plant as before indicated.

In sparganosis puerperarum (the swelled leg of puerperal woman) it is of great efficacy, both internally and locally employed.

In impotency and sterility it certainly is not destitute of power. Without citing any new cases, it will be sufficient for our present purpose to say, that from some cause, the impression obtained within the circle of my own practice, that no married lady could take the red syrup, as the preparation was commonly called, without the hazard of augmenting her cares, and it has been objected to on this very account. My testimony here, like that of Dr. Gallup when interrogated concerning the diuretic power of cleavers, is not directly positive; he said that "he had used it, and his patients generally made water afterwards." So I have certainly known conception to follow upon its use, after a long period of repose.

The catalogue above given, enumerating the diseases and conditions in which conium may be advantageously employed for the most part, is derived from personal observation and experience. I have drawn from memory alone, never having kept a record of cases. Other conditions might be called up and other diseases might be included if it were deemed necessary. But after all, gentlemen, you must yourselves first become familiar with the nature, power, and manner of operation, and the best mode of administering the article, before you can discern its adaptation for the accomplishment of a particular end.

The knowledge which I have endeavored to impart you must first make your own. You cannot here trade long upon borrowed capital. It is not your knowledge of the plant that is an acquisition to your skill, but your knowledge of the *medicine* derived from the plant, confirmed by your own experience, that alone renders it valuable to you. It is not the *medicine* that makes the physician, but it is the *physician* that makes the *medicine*, and makes it accomplish his purpose. An old well-tried rifle in the hand of an accomplished hunter is one thing; but it is quite another thing in the hand of a novice. It is the accuracy of the knowledge which a physician attains of the articles he employs that alone entitles him to consideration and distinction. This constitutes the *true* measure of his skill, and is all that is valuable in experience. For the lack of such knowledge—a knowledge that comprehended the powers of remedial agents, I have repeatedly seen old practitioners labor assiduously toward the accomplishment of a case, where the pathological condition of the patient was manifestly beyond the reach of the entire Materia Medica. The conclusion is self-evident and irresistible—that such a one has no experience; he has never yet learned the true limit of the powers of the agents he employs, like those described by the pen of inspiration—"always learning, yet never able to come to the knowledge of the truth."

Selections.

POTATO ROT.

By H. W. Harkness, M. D., San Francisco, California.

The disease termed the *potato rot* has been known for twenty-five years to be owing to a fungus, which destroys the vitality of the plant.

This fungus was named *botrytis* by Montagne, who first described it.

As it has, however, since been discovered that the pest belongs to a pretty extensive family, termed *peronospora*, it has received the specific name of "*peronospora infestans*."

Its first appearance this season (so far as I can learn) was on Wednesday of last week, at the Almshouse farm near this city, where its work was accomplished with a rapidity which seems incredible. The Superintendent informed me that on the day previous to its appearance, May 26th, the plants were green, and apparently in luxuriant health. On the day following the fungus had already accomplished its work.

The shrunken leaves were of a dirty brown, the stems also, involved in the general ruin, were of a blackened hue, while the tubers already exhibited signs of premature decay.

The Superintendent further stated that the loss to the county of San Francisco on this single farm would probably amount to $5000.

This fungus takes precedence of all others with which we are acquainted as a pest to the agriculturist. The loss it has occasioned during the last twenty-five years is simply incalculable. This disease is so wide-spread, and the plant on which it preys is so generally cultivated, that we are unable even to proximately compute the loss in the aggregate.

I may state, however, by way of comparison, that the coffee blight, a comparatively insignificant pest, has within six or seven years caused damage in the Island of Ceylon alone to the extent of at least twenty-five millions of dollars.

I propose this evening, by the help of drawings and microscopic slides, to illustrate some of the phases in the life-history of this destructive fungus.

I say some of them, for, although it has received the unremitting attention of scientists for a quarter of a century, there are still questions regarding its growth and development which remain unanswered.

It has been determined, however, that the germ exists in the leaves and stems of the potato plant before its appearance upon the surface of the same, in the form of minute mycelial threads. These may remain for an indefinite time perfectly innocuous, or until the atmospheric conditions favor their further development. As to the atmospheric changes, requisite to set these morbific forces in motion, there is still doubt. Most observers have attributed the result to a foggy night. In the case of which I am now speaking, the night preceding its appearance was exceptionally fine and clear. In this instance, however, the wind currents were from the sea, and surcharged with moisture with too high a temperature to admit of condensation, in which case some of the supposed necessary conditions for its appearance, viz: warmth and moisture, were fulfilled.

When the fungus has once begun to develop, its growth proceeds with great rapidity. The mycelial threads are extended in every direction between the cell structures, the protoplasmic elements are appropriated by the fungus, and the plant cells die from exhaustion.

On the other hand, the mycelium forces its way to the surface of the leaf, through the breathing pores or stomata.

On reaching the outer surface branches are thrown off from the mycelium, each one of which bears on its tip a *sporangium.* These sporangia are egg-shaped bodies, each containing from six to sixteen *zoospores.* These latter are *motile*, when placed in water, and swim away by means of *cilia.* After a quarter of an hour or so, however, the cilia drop off and the spore settles to the bottom of the vessel, and is in a condition to germinate.

When we consider the fact that from the under surface of each leaf there are thousands of such *sporangium-branches*, each surmounted by its sporangia, filled with spores, we need no longer be surprised at the rapidity of its increase or the extent of its havoc.

As before stated but a few hours are requisite for the full development of the fungus; it is more than probable that before the sun had arisen upon this plague-stricken field, the mature sporangia had burst and showered down upon the earth beneath their myriads of spores. The tubers, now deprived of the necessary support derived from the stem and leaves, soon succumb to the deadly influence of the fungus.

I herewith present for your inspection this evening several sections of a diseased potato-leaf, which will serve to make the subject more clearly understood. You will observe that the mycelium is firmly imbedded down in the centre of the leaf, traversing between the cells, but not generally penetrating them. Tracing a filament of the mycelium to the surface of the leaf, you will observe that it branches immediately on coming into contact with the atmosphere, each branch terminating, as I have said, in an egg-shaped sporangium. These serial trunks are tubular, and contain minute granules.

Those of you who are familiar with the appearance of the healthy vegetable cells will at once observe that they are destitute of chlorophl.

As this disease is so violent as to cause the destruction of a crop in a single night, it is useless to discuss methods for a curative treatment.

The farmer, who has lost the proceeds of his summer's toil between the hours of his sleeping and awaking, is in no proper mood to hear suggestions as to what *might have been done* to arrest its progress. After exhausting all our resources for acquiring a correct knowledge of the *causes* of the disease, we should manifestly give henceforth our undivided attention to searching out means for its prevention.

Of the many expedients which have been suggested for the accomplishment of this purpose, none have, as yet, been attended with more than a partial success. It would appear, however, reasoning from analogy, expedient to import the seed for the coming crop from a distant and non-infected district, and to wash the tubers in a solution of some material which may prevent the germination of any spores that may be on the surface, and, afterward, to store them in such places as will keep them as free as possible from contagion.

I now wish to call your attention to another, and, as I think, distinct fungus, to be found upon the specimen before us. This I will attempt briefly to describe. It arises from its mycelium in the same manner as the peronospora, and, like it, may be traced among the cells; but there are, however, these marked distinctions between the two fungi: The aerial mycelium of this, as you will observe, is of a dark color. It is seldom branched. Throughout the entire length of the aerial, as well as the subcuticular mycelium, marked septa are observable. Contrast this with the peronospora, the mycelial threads of which are tubular, without septa. Again, where this is branched, the branches occur at the septa. Further, this fungus appears upon both the upper and under surface of the leaf.

The sporangia also present these peculiarities. While the sporangia in the former arise from the hyphæ on a short, inconspicuous style, this arises on a lengthy, symmetrical style. The sporangia itself is much smaller, and, instead of being decidedly oval, is more nearly cylindrical in form.

With these facts before me, I cannot consider this a case of polymorphism, but rather as a distinct fungus.

To what extent this new parasite is responsible for the damage accruing I am at present unable to declare. Yet it is almost certain that in some way it has played no inconsiderable part in the work.

REMARKS ON DISEASES OF THE HEART.

Before the Baltimore Medical Association.

Dr. Arnold:—" Writers classify them as functional and organic, and the symptoms of the former are frequently more marked than those of the latter. In functional diseases palpitation is very conspicuous. The disturance may be in regard to force, to frequency or to regularity. Force may be of intrinsic origin, as from morbid innervation of the heart itself. This cannot be demonstrated clinically, or by post-mortem; but the functions of other organs are affected by the condition of the nerves, and we are justifiable in supposing that the heart is also. Usually, however, it is of reflex origin, as from tea, coffee, dyspepsia in nervous females. In Bright's disease there is frequently hypertrophy of the left ventricle, of which it is difficult to say how it is brought about. Some say that the blood acts as an irritant; others, that there is stenosis of the blood, which makes increased propulsive power necessary. In these cases palpitation is sometimes seen. The causes of disturbed *rhythm* are numerous, as emotional excitement, disease of cerebral system, gastric disturbance and dyspepsia. The causes are present in every person, but, as it only occurs in a small proportion of persons from sympathetic or pneumogastric disturbance, we have to admit a peculiar idiosyncrasy. Another form of heart disturbance is characterized by morbid sensibility referred to the heart itself: there is precordial anxiety, sinking, constriction of the chest, neuralgic pain, and a feeling of impending dissolution. This has been ascribed to disturbance of the sympathetic or cardiac plexus.

"Can the heart be subject to cramps, tremors or fluttering? I think it can, as well as any other involuntary muscle. Young persons who grow too fast often complain in this way. Experiments have been made on fasiculi of the cardiac muscles and tremors produced. Thus angina pectoris, although it may be produced by ossification of coronary arteries, or disease of the valves, etc., has been proved by post-mortem examinations to be in some instances at least functional. Functional diseases have no morbid anatomy. I am an organicist, and believe that no functional disturbance can occur without some pathological change, although it may not be discovered. In the examination of persons complaining of disorder of the heart, if we find no adventitious sounds nor hypertrophy, we conclude that the disease is not organic. This conclusion is too hasty, for there might be changes in the chorda tendinæ which would give no murmur, and in mitral regurgitation the murmur may be absent at times, dependent upon the condition of the blood. The clinical history of fatty or flabby heart is hard to make up. I have seen some cases, in old persons, in which no morbid sounds could be detected, which died suddenly.

"In the treatment of increase in force of heart, the cause must be studied.

It is hardly a serious matter under any circumstances and requires no special treatment. The rhythmic form of functional disorder, if it continue for any length of time, is not a trifling affair, and may at any moment become serious. Sometimes these cases terminate fatally; anaemia is frequently present, and then iron is indicated. In robust persons a somewhat reducing mode of treatment must be pursued.

"Of organic diseases, aortic regurgitation is the one that most frequently leads to sudden death. It ought to be borne in mind that digitalis is a most dangerous remedy, as it retards the heart's action, and fatal paralysis may result. In hypertrophy or dilatation of the left ventricle, as well as in mitral regurgitation, digitalis is very useful. These cases will do well as long as the organ is well nourished, but when nutrition fails, disastrous results ensue. Digitalis must be used with caution. It is said to be useful when dropsy takes place. Congestion of lung is very apt to follow, and I think more cases of pulmonary apoplexy are produced by mitral insufficiency than by any other cause. As we have no means of curing an organic disease of the heart, the treatment must be governed by the symptoms. Fatty degeneration is frequently followed by hypertrophy, and in these the best and only remedy is an alcoholic stimulant. Digitalis is dangerous in these cases; other stimulants are not to be compared with alcohol."

Dr. Chew said there is one form of palpitation which is produced by impairment of power of the pneumogastric. The contractions of the heart are produced by the sympathetic, while the pneumogastric is inhibitory in its action. Any impairment of the power of the pneumogastric will lessen this inhibitory influence. This is frequently seen in dyspeptic persons. I cannot agree in regard to the inadmissibility of digitalis in aortic regurgitation. It is frequently associated with a dilatation of the left ventricle, and it is in just this dilated condition that digitalis is useful. It should be given in small doses and carefully watched. Dr. Aronold:—"I hesitate to give it on account of its cumulative character, and we connot always watch it. I have seen it used in some of these cases with very bad results. It is frequently useful in functional disease."

WHAT HAS VIVISECTION DONE FOR MEDICAL SCIENCE?

A. *It has succeeded in advancing our kuowledge of Physiology, by—*

1. Discovery of the two classes of nerves, sensory and motor, by Sir Charles Bell.

2. Discovery of the functions (motor) of the *portio dura* of the seventh pair by Sir Charles Bell. Previously to this discovery, the *portio dura* was often cut by surgeons for the cure of neuralgia!

3. Discovery of the functions of the anterior and posterior roots of the spinal nerves by Sir Charles Bell.

4. Discovery of the functions of the anterior and posterior columns of the spinal cord by Brown-Sequard and others.

5. Discovery of one of the functions of the cerebellum in co-ordinating muscular movements by Flourens and others.

6. Discovery of the functions of the gray matter on the surface of the cerebral hemispheres as connected with sensation and volition by Flourens, Magendie, etc.

7. Discovery of the motor functions of the gray matter covering certain convolutions in the anterior part of the cerebral hemispheres by Hitzig, Fritch, Ferrier, Gudden and Nothangel.

8. Demonstrations of the circulation of the blood by Harvey.

9. Measurement of the static force of the heart and discovery of other hydraulic phenomena of the circulation by Stephen Hales, Ludwig, etc.

10. Discovery that atmospheric air is necessary to the maintenance of life, and that, when stupefied by its withdrawal, animals may be resuscitated by re-admitting it, by Robert Boyle in 1670.

11. Discovery that atmospheric air, by continued breathing, becomes vitiated and unfit for respiration, by Boyle.

12. Discovery that the air was not only vitiated but also diminished in volume by the respiration of animals, by Mayou, in 1674.

13. Discovery of the relation, as regards respiration, between animal and vegetable life, by Priestly, in 1722.

14. Great discoveries by Lavosier on the physiology of respiration from 1775 to 1780, namely, that respiration acts only on the respirable portion of the air, or oxygen, while the remainder, nitrogen, is entirely passive in the process; secondly, that when animals are confined in a limited space, they die when they have absorbed, or converted into carbonic acid, the greater part of the oxygen, and so reduced the air to the state of an irrespirable gas.

15. Numerous facts in the physiology of digestion observed by Blondlot, Schwann, Bernard, Lehmann and others, by experiments on animals.

16. The discovery of the functions of the lacteals by Colin, Bernard, Ludwig, and others.

17. The discovery of the functions of the eighth pair of nerves in relation to deglutition, phonation, respiration, and cardiac action, by John Reid and others.

18. The discovery of the functions of the sympathetic system of nerves by Pourfour du Petit in 1727, Dupuy in 1816, Brachet in 1837, John Reid and Brown-Sequard.

19. The discovery of the phenomena of diastaltic or reflex action, by Marshall Hall.

20. The discovery of the action of light on the retina by Homgren, Dewar and McKendrick.

21. The discovery of the glycogenic function of the liver by Bernard, Macdonnell, Pavy, etc.

22. The discoveries of the whole series of facts in the domain of electro-physiology, by Matteucci, Du Beis-Reymond, Pfluger, and many others. These discoveries have important practical bearings.

B. *In aiding Medicine and Surgery, by—*

1. The tranfusion of blood, and introduction directly into blood of medicines; first proposed by Robert Boyle in 1665. In 1665 Lower transfused blood from vessels of one animal into those of another. First done in human being by Dennis and Emmerets in France in 1666. Blundell's celebrated experiments on animals in 1818. Since done by many others—Dumas, Milne-Edwards, Dieffenbach, Bischoff, Doubleday, Brigham, Waller, Burton Brown, Klett, Lane, Lavy, Berard, etc.

2. Artificial respiration. Vesalius showed that by blowing up the lungs with air, after the chest was opened, stoppage of the heart's action might be delayed for some time. Hook in 1664 first demonstrated the possibility of artificial respiration. Brodie, Hope, La Gallois, Wilson Philip, Marshall Hall, and Silvester, have practised it on human beings.

3. The causes of cardiac sounds have been determined entirely by vivisectional experiments.

4. Phenomena of the circulation within the cranium examined experimentally by Kelly, Burrows, Reid, etc.

5. Hunter's operation for aneurism was first demonstrated and tried on living animals. This he did in 1785. He also found by experiments on animals that in many cases the arterial coats were diseased immediately above the aneurism, and that consequently it was necessary, in order to avoid secondary hemorrhage, to place the ligature higher up.

6. The office of the periosteum in regeneration of bone has been demonstrated experimentally by Du Hamel in 1740, Hunter in 1772, Syme in 1837, Wagner in 1853, and Leopold Ollier in 1858. The practical importance of these observations is recognized by all surgeons who have had much to do with diseases of bones and joints.

7. The researches of Redfern into disease of cartilage.

8. The researches of Stricker, Cohnheim, Von Recklinghausen, and many others, on inflammation, more especially of cornea and serous membranes.

9. Without vivisection experiments, we would know very little of the phenomena of inflammation.

10. Experimental inquiries into many zymotic diseases showing occurrence of micrococci.

C. *In advancing Therapeutics, Relief of Pain, etc., by—*

1. Use of ether.
2. Use of chloroform.
3. Chloral, discovered experimentally by Liebreich.
4. The actions of all remedies are only definitely ascertained by experiments on animals.
5. Action of Calabar bean, by Fraser.
6. Antagonism between active substances and the study of antidotes—many observers.

The above are simply examples which have readily occurred to the mind. To record all the facts given to physiology by experiments on animals would simply be to write the history of the science. Therapeutics is yet in its infancy; but nearly all the facts definitely known regarding the actions have been gained by experiments on animals. To stop experiments on animals would as surely arrest the progress of physiology, pathology and therapeutics, as an edict preventing the chemist from the use of the retort, test-tube, acids and alkalies, would arrest the progress of chemistry. —*British Medical Journal.*

THE OPERATION ON GEN. JOHN C. BRECKINRIDGE—HIS REMARKS, ETC.—(AN OPEN LETTER.)

By Lewis A. Sayre, M. D., New York.

I only arrived home yesterday, and found your kind letter of last week had been waiting for me some days. I was in such intense agony yesterday from the inflammation in my ankle-joint, which had been increased by traveling, that I could not write, and I now do so while lying on my back, and you must, therefore, excuse the chirography.

I will simply give you a statement of facts, so far as I was connected with the case, and you can then judge of the absurdity of many of newspaper statements.

On arriving at Lexington, the car in which I was sitting could not get up to the platform of the depot, and I was compelled to jump down some two feet or more, and unfortunately stepped with my heel on a small loose rock, which twisted my foot outward, and caused the most intense pain for a few minutes just over the internal lateral ligament of my left ankle. After a few minutes I was able to hobble around the car to where the carriages were, and found Dr. Blackburn with a carriage which the driver said had been sent by Dr. Desha for Drs. Gross, Blackburn, and myself, to see General Breckinridge. As I had been informed by some one that Dr. Dudley was his physician, I refused to go, but went at once to the house of my cousin, E. D. Sayre, and Dr. Gross went with the Prestons. While taking off my shoe to see what damage I had suffered, Dr. Blackburn drove up, and said Dr. Desha was waiting for me and Dr. Gross at General Breckinridge's house, and that Dr. Desha, and not Dudley, was his attending physician. I did not take off my stocking to examine my foot, but immediately put on my shoe and went with him. Dr. Desha received me very courteously, but said he had been waiting for me since 11 o'clock. I informed him that I had not come from the car direct, because I had understood Dr. Dudley was in attendance, and as I had received no message from him, I refused to come. He then informed me that he was the only physician in attendance since the death of Dr. Bush. In a few minutes Gen. Preston came in and said Dr. Gross would not come, as he had not seen Dr. Dudley (doubtless under the impression that Dudley was in attendance.) Desha seemed a little hurt, and replied rather sharply that he was the only one in attendance; and General Breckinridge then said: "Let me settle this matter, if I am a sick man. You all want to go to the races, and it is now 12 o'clock. Desha, go with Preston and take your lunch with Gross, and then go to the races, and Blackburn, you go with Sayre; and after the races, come and over-haul me at 4 o'clock." I think these were his exact words; read this to Dr. Blackburn, and he can correct any error.

We met at 4 P. M.—Desha, Gross, Blackburn, and myself. After a full history from Desha of his case for the past three months, and from himself of his previous condition, we made a very careful examination of his whole body; first by Dr. Gross, and then by myself. He was very much emaciated and anæmic, in fact, almost bloodless. The feet were very slightly œdematous, which might easily occur from his position (upright) in his anæmic state. There was no effusion in the abdomen; the chest was perfectly resonant and normal *all over the left side.* The same condition in right side in its *upper* two-thirds. The lower portion of the right side dull all round; intercostal spaces rounded out, and on measurement from median line to centre of spine, one inch and seven-eighths larger than opposite. In the upright posture, percussion gave dullness at a fixed line, which was marked with a pencil (in almost every instance when I put the pencil on him he remarked, that's it, there you are; you are right on the line, or some similar observation.) On laying him over forward, the line of dullness changed position, extending higher in front and more resonant behind and below the line of dullness when upright, showing that the dullness was from a fluid and not from consolidation. On shaking him, no succussion sound was obtained, leading us to believe that the fluid was not in the pleural cavity, but deeper seated.

We then went out into the yard for consultation. Here Dr. Desha showed us two large tin spittoons containing the expectoration since 5 o'clock A. M. (eleven hours). We were amazed at the amount (one quart, a pint and a half). The Doctor said some days it was much more, often nearly four quarts in twenty-four hours. When he could expectorate

freely, he was comparatively comfortable; but some days he coughed but little and raised almost nothing, and then he seemed as if he would die of suffocation. He read to us a microscopical examination of the discharge showing bile pigment and other evidences of having come from the liver.

Our diagnosis was probably (original) cirrhosis of the liver, subsequent inflammation of lower lobe of right lung, adhesions of liver, diaphragm, and lung, with abscess of liver and lung, which had found an outlet through the bronchi. Death was inevitable, and his only hope of prolonging life or being comfortable was by making an outlet below to save him the effort of coughing up this immense amount of offensive, viscid, tarry pus, blood, and mucus, and which Dr. Desha stated had often threatened to suffocate him.

After carefully considering the whole case, we all agreed that this was the only chance to make him comfortable, and if successful, might probably prolong his life, but never cure him. Dr. Gross was selected as the one to explain it to General Breckinridge. This he did in a most clear and satisfactory manner. General B. asked a few very intelligent questions about the operation, mode of performance, dangers, etc., which Dr. Gross explained in his usual clear and lucid way. He then sat quiet for about three minutes, looking at each of us most intently with those great eyes, as if he would look us through; then straitening up with great dignity, and in a clear, full, sonorous voice, but with the sweetest melody in it, said: "Gentlemen, I am under the greatest personal obligations for this great kindness, for your courtesy and attention in coming this great distance to give me so careful an examination. I wish to express to you my warmest gratitude. I feel perfectly satisfied from your address, and Dr. Gross' clear description, and from my own sensations, that you have a perfectly clear and exact conception of my present condition, and that your proposition offers me all that science now can do for me. I only wish to add that I am not only willing, but anxious to have the operation performed, and I am now ready to submit to your knife."

The magic of his enunication was such that Dr. Gross remarked: "General, your voice seems as clear and strong as ever."

Throwing his arm with a beautiful gesture, and with a beautiful smile, he said: "Why, Doctor, I can throw my voice a mile."

He was anxious to have the operation done at once, but Dr. Gross explained to him that he was weak, exhausted from the examination, and the recent coughing had emptied the sac, and in his present condition the operation might be dangerous; better wait till morning, when the sac would be full, he rested, and the operation much easier performed.

Ten o'clock A. M. the following day was the time appointed, and we left. Dr. Gross had appointed me to perform the operation. Dr. Blackburn went to a silversmith and had a canula made to insert in the wound after the operation.

I went to General Preston's to dinner, but my ankle pained me so much that I had to return. By the next morning the inflammation had so increased that I was compelled to get crutches, and it was with the greatest difficulty that I was able to get to General B's at the hour appointed. When I arrived I found him dressed and in the parlor, instead of being in bed ready for the operation. Seeing me come on crutches excited his sympathy, and he immediately began to talk. Dr. Gross and myself both tried to keep him from talking, fearing it would excite coughing, but he would persist in expressing his regrets at my misfortune, and finally began to cough. Dr. Gross administered a little ether to quiet the cough, but he resisted violently, saying "it was no use, when it got started it must come," and with great effort, almost like immediate suffocation, he coughed up an

enormous amount of the same material we had seen the day before. Of course the abscess being again emptied, we were in the same condition as on the previous day. But as Dr. Gross was to leave at 2. P. M., and Dr. Blackburn also, it was thought best not to wait, particularly as we had all then just had an opportunity of witnessing the imminent danger that he was in at every effort he made to unload himself of this enormous collection.

After coughing up a little over a pint and a half, he seemed comfortable; was put to bed, chloroform administered, and I made an incision one and three-fourth inches in length along the upper border of the eighth or ninth rib into the pleural cavity; no pus escaped, proving our diagnosis that the fluid was not in the pleural cavity was correct. The lung receded before the atmospheric pressure, and the finger passed into the cavity could feel the walls of the diaphragm and adherent lung, but we had no trocar long enough to reach it, and it was decided to wait until the abscess again filled, which would bring its walls near the external opening, and then puncture with trocar or aspirator. And 6 A. M. Wednesday was fixed for the hour. Dr. Gross expecting to leave at 7. I got home with great difficulty and was put to bed, and could not leave it until the following Sunday, not even to sit up five minutes. Consequently I sent my son next morning to inform them of my illness and request Dr. Gross to complete the operation. He returned and informed me that they thought the General was dying, and did not open the abscess.

For particulars of his condition from this time until Monday following, I must refer you to Drs. Gross and Desha. Dr. Desha was with him almost the whole time, night and day, and can give an accurate account of his daily condition. All sorts of rumors came to my bed-room almost every hour, but I knew nothing definite or reliable until Sunday afternoon. Dr. Desha called on me and stated that he was rapidly sinking, no cough, or expectoration for some hours; abdomen distended to its utmost capacity, speaking only in a whisper.

I saw him the next day (Monday) at 10 A. M., with Dr. Desha. He was lying flat, almost horizontal for the first time; breathing perfectly normal; his face bright and cheerful; the tympanitis had entirely subsided, and there was not the slightest pain over the abdomen, or effusion into it; the odor of the room was terrible, although the window was open. On smelling his breath, I found it not offensive, but on lifting his shirt, it was found saturated, the discharge having soaked through his bandages, and when the bandages were removed, the offensive gas was found to escape from the opening. The wound was gaping wide (in fact, was almost circular) and filled with a white slough, looking like wet cotton; taking it with the forceps a large piece tore off, giving exit to considerable fluid. Taking it again with the forceps and pulling gently in different directions, and snipping two small thready attachments with the scissors, a piece was removed larger than a white walnut, without one drop of blood. Immediately the pus flowed in quite a stream, and, of course, I felt delighted. I did not insert any canula, as stated in the papers, as there was no need for any. The wound was covered with oakum wet in carbolic acid, and secured by a roller applied by Dr. Desha. He then washed his hands and face, put on clean linen, combed his own hair and asked for his breakfast. He drank a half cup of beef tea and ate a slice of toast, and then drank two large goblets of milk and cream, half and half (not brandy as in the newspapers.) He sat up in bed himself, and said he felt much better than when I first saw him, a week ago, and he certainly looked much better. He talked cheerfully, commented on the various newspaper articles. One of

them, the *Lexington Daily Press*, which had described him as "suffering from an attack of New York surgery," he said was infamous and atrocious.

Dr. Desha, Col. W. C. P. Breckinridge, and my son were present, and heard his remarks. Of his expressions to me personally I prefer to say nothing; but refer any one who is anxious to know what his views were as to the diagnosis, necessity of the operation, and the manner of its performance, to the other gentlemen who were present and heard his remarks.

I certainly left him feeling greatly encouraged, and hoped that he might be prolonged for some time in comfort, although no one ever deceived him with the idea of a perfect recovery.

I have thus given you a minute account of everything that occurred in the case while I was with him. You must pardon this minuteness, but when there have been so many erroneous statements, I thought it better to correct them all at one time, and answer no others. I have sent a copy of this to Dr. Gross, requesting him to draw up the case for some medical journal, and if he does not do so, you can read this to Gaillard, Yandell, or any other editor who wants to know the truth.

NOTE.—This letter was addressed to Dr. J. M. Keller, of Louisville, Ky.

ERYSIPELAS AND PUERPERAL FEVER.

By S. N. SQUIRE, M. R. C. S., and L. S. A., Wivenhoe, Eng.

In Mr. T. Spencer Wells' address on puerperal fever, published in the Journal on April 17th, I find the following: "A country surgeon attends a man who has erysipelas after a broken arm. He also attends a healthy woman in an isolated cottage in a natural labor. There is no puerperal fever in the district, yet this woman dies of puerperal fever. * * * Such a history as this would have tenfold weight, as being free from numerous sources of fallacy and doubt."

On the night of February 11th last, my assistant went to attend a man who had fallen down and cut his head open over the occiput down to the bone. The wound was about an inch long. On the second night, it bled, evidently from a small artery, which he arrested by a compress of lint.

On the 20th, the man was taken very ill. I myself went to see him, and found that he had been suffering from rigors. I examined the wound; the scalp was somewhat swollen. I carefully washed and dressed the part. The same evening, I was called to attend a woman in confinement (age about thirty-seven, fifth child), who had a natural labor. The next day I found that the man was suffering from erysipelas; it was running down over the forehead. On the 22nd, the woman had a chill, with all the symptoms of puerperal fever setting in. She died on the 27th; the man likewise died on March 1st. I took every precaution whilst attending other cases, and did not wear the same external clothing; so that I did not infect any other lying-in women.

Early on March 3rd, I attended another woman (age twenty-two, second confinement) who, on the day following, had all the symptoms of the previous case. I questioned the nurse, as she came from the village where the man died, whether she had been in the house. She informed me that she had been there to assist, and left that place direct to go to the woman in labor. The case terminated fatally on the 10th. The child had erysipelas at the navel, which spread all over the body; it died on the 18th.

A nurse, who was in constant attendance upon the man, had an abrasion on the nose; she had erysipelas on March 3rd, and died on the 7th.

Whilst attending the man, I was also daily dressing two women, each for an ulcerated leg; both had erysipelatous inflammation of the leg. The husband of one, an old man, aged about seventy-eight, had erysipelas over the head and face, from which he got better, but died of exhaustion on May 6th. A son of the man's master called to see him on April 25th; he had a slight scratch on the septum of the nose. On the 27th, erysipelas made its appearance, and spread over the face, from which he has now recovered.

To go back again to the first case. On March 13th, a woman, who had been several times to see the man, (whose house was directly oppostie her own) had a severe attack of erysipelas over the head and face, she recovered. A young women likewise visited her, and at the same time had her ears pierced for rings; erysipelas affected them, and spread rapidly over the head and face; she recovered after a severe attack. During the interval of the two puerperal cases, I attended other women, who escaped infection. Thus, I had nine cases of erysipelas and two of puerperal fever, with six deaths, all to be traced from the first. In looking over my mid-wifery list, I find I had previously attended 1,139 cases without losing one. I have been in practice twenty-five years, and, during that time, I have only lost four cases, not including the last two I have previously mentioned. One died of inflammation of the lungs, three days after confinement; another (a turning case) of peritoneal inflammation, three weeks after confinement; another of scarlet fever; and the fourth of puerperal fever, the cause of which I could not discover. I generally make it by practice, if I have any contagious disease about, to visit my child-bed cases first; the doing so, I think, is one reason why my death rate is so low. Idiopathic erysipelas I consider not contagious; but traumatic, being caused by pyæmia, I think is, and I hold that it would be very unwise to attend a labor directly after visiting such a case. I have had many cases of the former kind, but can not now remember ever losing one, nor have I seen that another person has taken it from one so affected.—*British Medical Journal.*

ON THE RESPIRATION OF MUSCLE.

B. Danilewsky (*Centralblatt fuer die Medicin. Wissenschaften*, No. 46, 1874) has investigated this subject in Sczelkow's laboratory. It is a well established fact, that muscular activity causes an increased consumption of oxygen in the muscles. As to the significance of this fact, physiologists differ in their opinions (Hermann and Ranke). The absorption of oxygen, as well as the excretion of carbonic acid, both of the active and passive muscles (gastrocnemii of a frog), at different temperatures, were carefully measured by means of a special apparatus devised for this purpose. The muscles were weighed with one gramme. From a table of the gas-analyses, which were conducted after the method of Bunsen, he arrived at the following results:

1. The quantity of carbonic acid excreted by a tetanized muscle, in comparison with that by a passively moved one, is smaller, the higher the temperature.

2. The absorption of oxygen by the active muscle always remains behind that of the passively moved one. It may, therefore, be concluded that this does not stand in direct connection with the process of muscular contraction. This is explained by the unequally greater contact of the passively moved muscle with new air than in the tetanized one. The increased

absorption of oxygen by the passively moved muscle produces almost no corresponding increase in the excretion of carbonic acid. One must, therefore, assume that both factors in the respiration are, within certain limits, independent of each other; that muscle can take up a very large supply of oxygen and conceal it for a long time in its plasma without excreting it in the form of carbonic acid. The absorption of oxygen increases in active muscle with the temperature.—*London Med. Record*, Jan. 20, 1875.

MONOBROMIDE OF CAMPHOR.

Mr. Robert Lawson, Pathologist and Assistant Medical Officer West Riding Lunatic Asylum, contributes to the *Practitioner* (April, 1875) another article on this subject.

"It will," he thinks, "be sufficiently evident by this time that the therapeutic value of the drug is not sufficient to entitle it to a place beside the many calmative and soporific medicines which are analogous to it. Many of these are certainly superior to the monobromide in the suppression of sensory, motor, and cerebral excitement, and none of them possess so many inherent bad qualities as a therapeutic agent. I have already sufficiently referred to the disadvantages arising from the insolubility of the drug, and the gastric irritation which, even though vomiting is not produced, is liable to result from its administration. In the hypodermic use of the drug it is an additional draw-back that the viscid solution in glycerine and alcohol obstructs the syringe needle either by clogging or by the formation of crystals during injection; and though the observation may appear a trivial one on paper, the circumstance is liable to cause great annoyance and inconvenience in practice. It is clear, in the face of this detrimental evidence, that, as the monobromide has not been advanced as a specific, its value can be established only by favorable comparison with drugs possessing analogous properties. By glancing briefly at the substances which are accepted as indubitably possessing the therapeutic features claimed for the medicine under consideration, it will be seen how far the latter falls short of the potency and fitness possessed by the former. Opium, chloral, cannabis indica, bromide of potassium, belladonna, hyoscyamus, conium, ergot of rye, valerian, assafœtida, and all diffusible stimulants, possess the capability of performing, either directly or indirectly, one or other of the many medicinal functions ascribed to the new drug. In several of them we have in a handy, soluble form, the means of producing sleep, uninterrupted by the vagaries of delusion or the promptings of repulsive hallucinations. In some of them we have medicines which are eminently narcotic, and still leave little or no trace of gastro-intestinal irritation. In both respects the monobromide of camphor is at fault, as the hypnotic condition induced by it is broken by the evident influence of painful subjective impressions, and the administration of it is apt to be followed by acute gastric catarrh and secondary impairment of tissue nutrition. In such conditions as are present in delirium tremens, hysteria, and other diseases affecting the sensory, kinetic, and intellectual centres, and generally associated with some concurrent disorder of the *primæ viæ*, there is no necessity for falling back upon a doubtful medicine for the production of a calmative effect. It is to be feared, perhaps, that the means already at our disposal for such a purpose have been too freely used when attention should have been more steadily directed to recuperative and radical measures. The same observations apply equally to chorea; and with regard to the suppression of con-

vulsive seizures, it is difficult to imagine that monobromide of camphor will ever supersede chloral in procuring central exemption from peripheral or internal irritation; or that by its power of contracting vascular calibre it will take the place of bromide of potassium or ergot of rye in the endeavor to modify the blood-supply to irritated centres. Though there is no doubt that by virtue of its hypnotic properties monobromide of camphor may, when administered in sufficient quantities, produce sleep in insomnia, subdue emotional, sensory, and motor irritation in hysteria, control convulsions, and even overcome the excitement of delirium tremens, yet it is evident that the drug cannot operate with the certainty and safety which characterize the analogous action of other well-known and time-honored medicines. If, in addition, the risk of exciting cutaneous inflammation by hypodermic, and gastric catarrh by oral administration be considered, it must be acknowledged that monobromide of camphor is an agent distinguished on the one hand by the absence of independent or special therapeutic value, and on the other by the presence of several faults, from which many analogous and more potent substances are altogether exempt.

ON GENERAL PARALYSIS OF THE INSANE.

Dr. George Thompson contributes to the *Journal of Mental Science* (January, 1875) a paper on the physiology of general paralysis of the insane. He refers to certain sphygmographic tracings of paralytics made by him at the West Riding Asylum, and depicted in the first volume of the Asylum Reports. On these chiefly he founds his theory of general paralysis. He is of opinion that the organic change which exists in the very early stages of general paralysis consists of a diminished calibre of the vessels, which is of the nature of a persistent spasm; also that this spasm, persistent if left untreated, is, if recognized early, amenable to remedial means, and that the lesions found after death are not the cause, but the result, of early organic changes that need be only of temporary duration. He found that the tracing of the pulse at the wrist of paralytics, when untreated, is precisely similar to that found in a person in good health, who had been exposed to a cold bath for the space of one minute. The vessels of the retinæ and optic disks are thin and attenuated, and the disks themselves void of their natural pink tint. General paralytics, he remarks, are more frequently the subjects of cerebral syncope than persons laboring under any other disease of the brain; and in the early stages of general paralysis, the temperature of the body is lower than in health, and the skin of the patient is in the condition known as cutis anserina, resembling that seen in the cold stage of ague, in cholera, or in rigor. He contends that, by the administration of remedies known to be antagonistic to spasmodic action, the pulse tracing may be brought back to a healthy form, and the retinæ and temperature likewise restored to the normal state. Dr. Thompson bases his theory of persistent spasm on the uniform appearance obtained in the pulse-tracing in the early stages of the disease. It is such as is found when the individual is exposed to such means as are known to produce spasm of involuntary muscular fibre. These are the application of cold to the surface, the administration of ergot, atropia, bromide of potassium, and lead. The condition of general paralysis is one, as a rule, of arterial contraction, but occasionally an hyperæmic condition is found. The mischief lies in a nutshell, which is vascular supersensitiveness. A patient whose pulse usually indicated vascular spasm, after drinking half a pint of asylum

beer, exhibited a tracing such as is usually found in pyrexia, and his temperature rose from 97° to 98°. The opposite condition is often shown by attacks of cerebral syncope. In confirmation of the theory that the lesions seen after death are the results and not the cause of early organic changes, Dr. Thompson quotes the words of Dr. Long Fox, who says that "variations in the normal blood-supply of the brain will, if long continued or frequently repeated, induce structural lesions that can be recognized after death; each of them may be the starting point of phenomena of a severe character, and if the duration of the attack be not protracted, will have no post-mortem appearance" (*Pathological Anatomy of the Nervous Centres*). The cause of the arterial spasm, the blanching of the nervous system, is, according to Dr. Thompson, a heightened susceptibility on the part of the vaso-motor system to such influences as are likely to affect it. This heightened susceptibility takes the form of alternate over-dilatation and over-contraction—of over-stimulation followed by a reaction. But the reaction becomes a persistent condition. The paralysis of the sympathetic, causing dilatation, becomes an irritation, causing persistent contraction; this persistent contraction prevents the rapid flow of blood essential to the nutrition of the brain, and the phenomena known as brain-wasting are the result. He also points to the fact, as stated by Dr. Wilkie Burman in the third volume of the *West Riding Asylum Reports*, that the average weight of the heart is considerably greater in general paralysis, and in chronic and consecutive dementia, than in other forms of insanity, the supposition being that hypertrophy has been set up by the absence of dilatability of the vessels. For all this the calabar bean is the best remedy at present known, but it must not be given during excitement, as has been done by some physicians.

[Dr. Milner Fothergill, in a paper on "the heart-sounds in general paralysis" (*West Riding Asylum Reports*, vol. iii.), speaks of the accentuated second sound of the heart in this disease, and attributes it to cerebral hyperæmia, a stage of hyperæmia with mental exaltation preceding one of atrophy, or brain cirrhosis, where obliteration of the function of the brain coexists. And in the fourth volume of the same reports he says, "conditions of brain-anæmia are induced by the use of agents which depress and slow the heart's action, *e. g.*, the calabar bean, in states of cerebral hypervascularity, and for this purpose Dr. Crichton Browne has used the physostigma to control the wild outbreaks of general paralysis."—G. Fielding Blandford.]—*Lond. Med. Record*, March, 24, 1875.

ON CYSTICERCI IN THE BRAIN IN A CASE OF PROGRESSIVE PARALYSIS OF THE INSANE.

The *Gazetta Medica Italiana-Lombardia* for January 16, contains a paper read before the Psychiatric Society in Milan, by Dr. E. Gonzales, resident medical officer of the Lunatic Asylum in that city, on a case in which cysticerci were found in the brain of a patient who had died of progressive paralysis.

The patient, D. A., aged forty-one, was admitted into the general hospital of Milan on March 10, 1871, suffering from symptoms which led to the diagnosis of general paralysis of the insane. In August, his condition being unimproved, he was removed by his wife, but was again admitted in October; and in March, 1872, was transferred to the Asylum, where the diagnosis was confirmed. On June 17th, he died of syncope consecutive on an epileptic fit.

In 1863, having previously enjoyed good health, he had a sudden attack of epilepsy. The attacks at first recurred at long intervals, and were sometimes followed by sopor, sometimes by fits of mania. From being mild and affectionate, he became violent and irascible, and negligent of his duties. His intellect, at first clear, became confused; the epileptic attacks became more frequent, and he fell into a state of general emaciation; with stuttering and uncertainty of gait. He had an idea that he was the possessor of great wealth, and that, though of known honesty, he was accused of petty thefts. His wife, to whom he was formerly much attached, he regarded as the cause of this disgrace. He was subject to hallucinations of vision and to insomnia. He was treated by nitrate of silver and other remedies, both in the General Hospital and in the Asylum, but without any improvement of his condition.

At the necropsy, which was made thirty-six hours after death, the dura mater was found to be somewhat thickened and firmly adherent to the cranium; the pia mater was congested. The cerebral convolutions were dense, and pressed against each other; the anterior cases were much flattened, as if atrophied. Half of the convex surface of both hemispheres was occupied by ten more or less transparent cysts of various size and shape, most, however, being round, and semi-solid consistence. They were of a pale yellow color, and were partly adherent to the pia mater and partly imbedded in the cerebral substance, from which they were removed by enucleation. The lateral ventricles were distended with serum; the right contained seven cysts attached to the ependyma, and in the left was a cyst floating free in the fluid. In the left sylvian fissure there were five cysts, joined together in a cluster. Resting on the medulla oblongata, between the foramen cæcum and the point of decussation of the pyramids, was another cyst; on removal, it left no depression. The medulla oblongata was of firmer consistence than normal, and it was somewhat of a straw color; the cerebellum was normal. The lungs were œdematous and hyperæmic; the heart was healthy. Nothing abnormal was found in the abdominal and pelvic viscera.

The cyst removed from the medulla was examined microscopically under the direction of Dr. Visconti; and the head of a cysticercus, furnished with a double row of hooks and four lateral suckers, was distinctly seen. The medulla oblongata presented alterations which were also found in five other cases of general paralysis. The nerve-cells were changed in form, and consisted of a homogeneous bright substance, without any nucleus or nucleolus; the margins in some cases being well defined, in others imperfectly.

Dr. Gonzales remarks that this case is interesting on account of the rarity of free parasitic cysts in the cavities of the brain, and because hitherto there has been no recorded case of cysticercus located on the medulla oblongata, nor of association of the parasite with progressive paralysis of the insane.

The author regards the progressive paralysis as not having been caused by the cysticerci, but by the pathological changes in the medulla oblongata.—*London Med. Record,* March 10, 1875.

Microscopy.

THE MICROSCOPE AND ITS REVELATIONS. By WM. B. CARPENTER, with the assistance of HENRY J. STACK. Fifth edition. Philadelphia: Lindsay & Blackiston. 1875.

THE MICROSCOPE AND MICROSCOPICAL TECHNOLOGY; a Text Book for Students and Physicians. By Dr. HEINRICH FREY. Translated and edited by GEORGE R. CUTTER, M. D. New York: Wm. Wood & Co. 1872.

By CHARLES STODDER, Esq., Boston, Mass.

Dr. Carpenter's book has been before the world for nearly twenty years, and is well known to microscopists as one of the best text books in the English language for the use of novices and amateurs, the class for which it was expressly prepared.

The fourth edition was published in 1868, since that time much progress has been made in apparatus, in microscope objectives, and in scientific discovery. Generally all these have been incorporated into the book, but some of the *evidences* of progress since 1871 are omitted. The new matter introduced is specified in the preface, which saves the labor of searching the whole book for it. The author candidly states that he "has not attempted to describe everything used" in England, "still less to go into minute detail respecting the construction of foreign instruments:"—so his work would more properly be entitled "The Microscope in England," for it is read and used by all English speaking peoples. He has left the more recent developments, both of the theory and practice of microscopy, to Mr. Slack, of whom it may be said that probably no one more competent could be found in England. There are some errors and omissions to be pointed out, because they affect the reputation of some of our own scientists and opticians, and because the authority for avoiding them was in print in London.

In the fourth edition, page 35, Dr. Carpenter attributed to Prof. H. L. Smith the *invention* of Tolles' binocular eye-piece, and his comment on it was "that the arrangement involves a decided loss of light and definition." Notwithstanding that Prof. Smith disclaimed the invention in 1872,* and in his letter maintained that the loss of definition is not so much as in the Wenham and Nachet forms, both errors are reprinted in 1875. Surely the man who owned and used the eye-piece for years is the better judge of its character than one who only looked at it at a public exhibition.

Again on page 213, fifth edition, a reference to Dr. Woodward's photographs of amphipleura pellucida, reads "another photograph sent to the *Royal Microscopical Society* was with a 1-18th (called a 1-30th) of Tolles, and this Dr. W. says exceeds all that I have been able to do in this direction with any objective except the immersion 1-15th so-called of Messrs. Powell & Lealand." A correct extract from Dr. W's letter in the *Monthly Micro. Journal*, April 1871, except that it is there plainly printed Wales, instead of Tolles, such a blunder is inexcusable.† But if those statements of the work of that objective in 1871 were worth incorporating into a text book in 1875, the work done by the same Dr. W. on the *same subject* in

* See letter in Monthly Microscopical Journal, July 1872.

† It is due to Mr. Slack to say that after his attention had been called to these errors he has retracted them, so far as that can now be done, in M. M. Jour. for April 1875, but without explanation of their origin.

1872, with another objective, should also have found a place as a matter of record. In the M. M. Journal for November, 1875, is a letter from Dr. Woodward referring to a new immersion 1-18th of Tolles (this time correct). "This objective is so surpassingly excellent on the plate, that I hasten to make the facts public as promised. With regard to the performance of the dry combinations of this objective, I will merely say that they gave me the striæ of a. pellucida rather better than any dry objectives I have ever tried. The behavior of the objective used wet is certainly admirable." He sends a set of photographs of Nobert's lines from the highest to the lowest. "These pictures certainly excel all my former work on the plate." "It will, of course, be expected that I should say something of the comparative merits of this new objective of Mr. Tolles, and the immersion front of the Powell and Lealand 1-16th which has done such good work for me since 1869. Certainly I must give the new Tolles' objective the preference on the plate, and on the a. pellucida, both by sun and lamp-light." This published in London in 1872 is entirely omitted from a chapter on the very subject is 1875! Why?

The plan and execution of the book is eminently satisfactory and useful for the day for which it is avowedly written, being a guide to the novice for the selection of an English microscope and apparatus, ample instruction for the use of them; and the bulk of the work affords a key to the class or nature of the unknown objects that the tyro is so often finding in the field of his microscope, not of course full scientific treatises on everything, but sufficient for the purpose, brought down to a recent date with reference to the original authorities.

Frey's is in two parts. The second part is devoted to microscopical manipulation, especially for physicians and their students, including the preparation and preservation of histological and pathological subjects. In this department it is probably the most complete of anything accessable in English, giving apparently all the various processes used or recommended by both continental and English microscopists. Of this fact only experts in that line can speak with authority. Therefore the present writer will not say more of it; except that, while the book is a good specimen of typography, the wood cuts are unworthy of the book or subject, and apparently represent the work of inferior German lenses; and also lose part of the value they ought to have from the neglect to state what magnifying power they represent.

The first part of Frey's work is devoted to the microscope itself. Going over almost identically the same ground as Carpenter, and nearly in the same manner. The remark applied to Carpenter's title applies as well to Frey's. It should be called the German microscope, for he knows little about any others, and attributes to Hartnach* two inventions which he copied or imitated from Tolles, the solid eye-piece and the binocular eye-piece.

With the exception of the omission of almost all others than German instruments, this part of the work deserves commendation, and there are many passages that may be quoted for the benefit of those who do not or cannot procure the book.

Page 15.—He condemns the common construction of French and German objectives, made up of two or three similar lenses, to be taken apart or used together, giving the preference to the plan so long used in England of the lenses being permanently attached.

Page 21.—"The optical portion is of course of the greatest import-

* Although Hartnach acquired his great reputation in Paris, he is a German, his instruments German patterns, and he is now in Germany.

ance, the arrangement of the stands is, on the contrary, of much less consequence, * * *. Nevertheless, disregarding the tediousness of the manipulation, poor, incomplete stands exert an immediately injurious effect on the optical performances of the microscope, by not permitting the necessary modifications of the illumination." He dilates on the importance of "testing" the lenses, and gives good directions for doing it, with this never-to-be-forgotten caution, "regard must always be paid, in deciding on the merits of an objective, to the purpose for which the optician has constructed it." How little do buyers of objectives from dealers know what quality the optician intended to give to any particular one. The dealers themselves do not know, and but few of them know how to test the instrument. The consequence is, the objectives, like Pindar's razors, are made to sell, with no particular quality.

"The strangest notions not infrequently prevail with regard to the optical portion. How often is the question still heard: How much does this instrument magnify? How often are microscopes ordered from an optician with a magnifying power of 500 to 600 diameters. Nothing is a greater misconception of the optical performance of our instrument, as it is only necessary to add a perhaps uselessly strong eye-piece to change a serviceable power of 400 diameters into a completely unserviceable one of 800, and therefore of no value to the instrument."—Page 73.

"We would give the practical advice not to purchase an instrument of an unknown optician, or, at least, without having it tested by an expert; and to have the greatest mistrust of all charlatanical recommendations, whether they come from the optician himself, or from a writer glorifying him."—Page 75.

And here comes an admission that would have astonished most students of ten or twelve years ago, who had had only a "German training," coming as this does from one of the best of German authorities: "Within twenty years several large firms in England maintained a higher rank in this department [*i. e.* the making of objectives] than the continental opticians had obtained, if we disregard the distinguished Italian savant Amici (1863): *No impartial person who knows how to test a microscope could deny this*, if he were to compare first-class microscopes originating in that period. Since that the emulation of the continental opticians has spurred the most skillful on to even higher productions, the difference has become less and less, and has finally disappeared."—Page 75. The difference between English objectives of twenty years ago and continental of 1872 may have nearly disappeared, but the difference between continental instruments of 1872 and both English and American "of 1869" is as great as before, while the last of 1874 are yet further in advance.

There are many other passages that could be extracted with advantage, but we have already taken much space, and wish some room to notice a "notice" of Carpenter's book that appeared in the *Boston Medical and Surgical Journal*, of April 22, 1875. This article is written with such German bias, with such mistaken ideas of the microscope and microscopy, that it will do much harm to the students of microscopy, if it is permitted to pass without a protest and exposure.

The writer heartily recommends the book "to the class for which it was written—amateur microscopists," and then objects to those parts which if they had been left out, would have rendered it comparatively valuless to them. Of course, in making his objections he did not know or had forgotton that Frey, the representative German, in the book noticed above, had apparently taken Carpenter as his model, treated the subject in the same order, in the same manner, and with nearly the same details; so that

the special criticisms that he makes on Carpenter apply with equal force to Frey.

His criticisms are written from the stand-point of a medico, one of those who think their profession are the microscopists *par excellence*, and that no others need be provided for; whereas, they do not comprise one-half in number or one-fourth in value of the buyers and orderers of microscopes.

The Boston critic says: "Our criticism on the work is that too large a part of it is devoted, not to what is seen, but to the way of seeing it." That is exactly what the amateur and novice wants such a book for—it is just what Frey gives—and the criticism is unjust, for three-fourths, at least, of the book are descriptions of "what is seen."

"We do not seriously object to the part on optics, though we think most of it superfluous." If superfluous in English, it is in German; for Frey gives the same. But it is not superfluous, for the book is not written especially for the graduates of colleges or technological institutions, but for students of microscopy, a large proportion of whom learn little of optics, except what they can obtain from such hand-books.

"We object, most decidedly, to about 100 pages that have the appearance of a compilation from the catalogues of English makers." Undoubtedly that was the source of the 100 pages, and it is a great convenience to buyers to have them brought together. Perhaps the objection arises from the fact that the English styles and improvements are the ones represented; if so, Frey's book may prove counter-irritant, for some pages, more or less, "have the appearance of a compilation from the catalogues of German makers," only two English being "deemed worthy of a place."

Now we come to the gist and cream of the whole. "The tendency is to encourage what we look upon as the bane of almost all the American and English microscopists who have not had, at least indirectly, the benefit of German training—namely, an inclination to make machinery take the place of the educated hand, and to waste time and money on optical effects quite valueless except for test objects. While the followers of this school have been struggling with diatoms and Nobert's test lines, those using simple instruments have made the discoveries that are now revolutionizing science."

The above involves several propositions, the belief in the truth of which is the error and "bane" of a certain class among us who know little or nothing of the *Microscope*, except what they have picked up during one or two years medical study in Paris or Vienna—ignorant of the progress made in America and England. This we endeavor to show from Frey himself—the representative of German microscopy. The first clause is copied from Frey, page 100. Frey writes: "In this place the important principle should be impressed, that movements which can be securely accomplished by the human hand are to be left to it, and are not to be executed by screws and other mechanical contrivances. Every experienced microscopist will regard the massive accessory apparatus of the large English microscopes as being somewhat superfluous and inconvenient." Notice, neither the critic nor Frey gives anything but their *ipse dixit* why movements should be executed by the hand, or explain how movements that *can not* be executed by the hand are to be executed. Of course all readers who accept that proposition take it for granted that Frey (and the critic also) knew what he was talking about; but read on page 76: "Large modern microscopes of English makers have not been accessible to me." After one has used, thoroughly, an instrument, is the time for him to criticise it, not before.

But one critic considers that those who have not had a "German train-

ing" waste their time on test objects—now Frey is the exponant of German training. Listen to him p. 63: "It is therefore unjustifiable to regard the study of such tests with contempt, as is occasionally to be observed among notable microscopists." As for the discoveries made with simple instruments "that are revolutionising science," they are to be proved. All honor to German plodding and perseverance, and to the work they have done; if they had been provided with better instruments how much more they would have accomplished. All contributions to science have not come from Germany. See the "Lessons in Biology by Drysdale and Dallinger," reported in the *Monthly Microscopical Journal*, 1873-4, and May, 1875—the most valuable contribution to the life history of certain monads yet made: it is not unsafe to say that such work could not have been done with any microscope yet made in Germany.

Both works may be recommended to students of the microscope as highly useful, but with this caution, that they must not take it for granted that the authors know everything about the instrument, or that they are infallibly correct. It is to be sincerely hoped that ere long we shall have a work on the microscope from some American who knows how, and has the disposition, to do justice to American workmanship. If we are not misinformed such a work is in preparation.

PREPARING SECTIONS OF COAL.

The following letter, forwarded to us, we publish with pleasure:

BALTIMORE, April 24, 1875.

A. F. DOD, Esq., *Secretary M. M. S.*

DEAR SIR—Your favor of the 19th inst., referring to me Mr. Moulton's inquiries about coal sections, is received. In reply I have to say that I have succeeded with some coals—but especially by liquids—such as I sent you, by the following process:

1. Macerate suitable pieces, ¼ or ½ inch thick, in liquor potassa until they swell and soften.
2. Soak for a few hours in pure water, and drain.
3. Macerate in nitric acid until the color changes from black to brown.
4. Soak for a few hours in water, and drain.
5. Put aside in alcohol for a day or two. If for future use let the pieces remain in alcohol.
6. Fasten in a cutter with paraffine and make sections.
7. Place in absolute alcohol.
8. In oil of cloves.
9. In balsam; and
10. Set aside with a small weight or cover—having, before the mounting, attached the label.

I am, yours very respectfully,

CHRISTOPHER JOHNSTON, M. D.
Cor. Mem. M. M. S.

THE MICROSCOPE IN MEDICINE.

You will see now the significance of what I said a few minutes since, viz: that women medical students should familiarize themselves with all instrumental helps in their profession, because, first, of their indispensable necessity, and secondly, because it will not do for you to go to men physi-

cians in the general professional way for help. In the Spring Course you will have ample opportunity to obtain practical familiarity with the use of the microscope. But, more than this, you need a technology, or instruction in how to work, how to prepare material for study, how to soften that which is hard—as teeth and bone—so that thin sections can be made suitable for investigation; how to render soft tissues, too soft for manipulation, as nerves and mucous membranes, hard enough for section. The opaque must be rendered transparent enough to transmit light, the perfectly transparent, as vitreous humor and some membranes, must be tinted enough and properly to render their structure optically visible. It is not enough to possess a microscope—you *must* know how to use it. It is *only* an instrument in the hands of the biological student, which is rapidly putting to flight the errors and false ideas of an obsolete physiology which came for a season like ill-omened night birds, and built their damp nests in the pillared palaces of truth. Microscopy is only another way of seeing. And this habit of piercing beneath the surface, of gazing down deeply into the reality and intricate structure of things, of enjoying sublime, intellectual, and emotional converse with objects hidden; using the grand old language of the diploma of the University of Pennsylvania, hidden from the gaze of the "common herd of literary characters," becomes the rule of life, until caution, patience and ceaseless check and guard against error and misinterpretation, with accuracy of thought and expression result from familiar use of this instrument of marvellous precision.

Let me here remark that looking and seeing are not synonymous terms. Most people look at such objects as threaten their personal safety, or mar, or contribute, to their pleasure, or the general daily things which pass like shadows before them. For this purpose eyes and a few aborted brain-cells are all the apparatus necessary. Such are largely automata. A very few see with positive focus, both optically and mentally, all that comes within their visual or cerebral aperture. A receptive consciousness holds a candle back of the eyes, somewhere in the glowing recording brain, which throws a monochromatic focus of light, bright as a sun-beam, on every picture sent in from without. These become the prophets and interpreters of new truths, the seers and will-workers of the world. When these speak, let those who merely look, listen. This conscious mental activity must distinguish the practical, advanced microscopist. A thousand worlds, each more populous than this daily surface life, which opens even with grandeur when the morning light breaks in the east and becomes drowned at evening in night's recurring bath, are unrolled before him. The mind is kept ever active by new and suggestive pictures, walks among and beholds the ancient types and foreshadows of all visible forms and organs. Mechanics reaps no triumph, nor art any combination for beauty or use, nor complex mammal offers organs of intricate structure, but somewhere in microscopic nature lies its antetype and parent. The cilium is the earliest leg and lever, and suggests in the rotatoria, when in motion, cog-wheels and endless chains. The transparent muscles of the hydroid polyps, isolated, yet seen in active motion, a hundred times thinner than a hair, are forerunners of the mariner's ropes which stay his ship in the wild tempest, or unfurl his white sails to the propelling breeze. The gizzard of rotifera and the cricket teach the mechanics and art of grinding corn and wheat for our food. The ineffaceable pigment of actinocyclus and the bed-bug's eye, rival in brilliancy and excel in durability all the paint Belzoni found in the tombs of the Pharaohs, or Turner spread on hazy landscapes. The glow-worm's light shining in the dew-drinking grass at evening, for a purpose, suggested to the mariner his beacon lights which guard our coast, and, like friendly stars, guide the

ships from danger. The invisible amœba always moving, we know not why nor whither, living as a microscopic unit in our ponds and streams, is found in our blood currents in countless millions, as white corpuscles, creeping similarly about among our tissues, carrying invisible physiological grist to the vital mill. In mollusca, the otoliths—in charming simplicity—foreshadow the incus, malleus, os-orbiculare and stapes in our own ear. The hydra in our ditches is an individualized and glorified isolated, gastric tubule. The liver and salivary glands in our common house-fly—common did I say? are spun out in single threads, with liver cells and gland cells a hundred times larger than in our own organs—a natural dissection, more delicate than art can make.

But anology and illustration are endless, and I have not time to multiply them. These are only dim rays from the microscopic world which I have reflected across our field of vision, to show the necessity of broad and thorough study among all organization, if you would aspire to a scientific comprehension of our own, of our origin, being and significance. Some of you who come up here, and will, in future, throng these halls, are earnest able women, with will-power enough to master all professional acquirements, with brains large enough to measure a monad or weigh a world. Through heavy home sacrifices, as will always be the case when woman steps into the higher intellectual and pioneer walks of life, you come here asking opportunity. In the department entrusted to me that opportunity you shall have.

Some may ask, is it not enough to know all that lies open to unassisted vision? Many persons go through life content with outside views and with the general appearances of things. I answer, no. Our present sphere of vision and knowledge is always too small while aught lies beyond.

To the physician, especially, knowledge is power. He must know all that is knowable, not in the limitless aggregate of his profession, that is impossible, but in that department or specialty he may select.—*From an Introductory Address of Dr. J. G. Hunt, of the Woman's Medical College, Philadelphia.*

MICROSCOPICAL EXAMINATION OF THE PROCESS OF HEALING ULCERS BY TRANSPLANTATION OF SKIN.

M. Thiersch, having a patient whose leg had to be amputated in consequence of a large and incurable ulcer, thought it a good opportunity to examine the changes that take place when portions of skln are implanted on granulating surfaces. For three weeks previously, he accordingly transplanted portions of skin day by day, the last pieces being applied eighteen hours before the amputation. The chief results were: 1. That adhesion occurs without the intervention of any intermediate cementing substance. The adherent parts are in immediate application, or at most are only separated by a couple of blood-corpuscles. 2. The adhesion, when complete, takes place by means of the inosculation of vessels, which may be observed even eighteen hours after the act of transplantation of the new skin. A connection is at this period seen to occur by intercellular passages extending between the sharply contoured vessels of the skin on the one hand, and those of the granulations on the other, and those intercellular passages become proper vessels in the course of a few days. 3. At the same time, the vessels of the skin beneath the transplanted portion undergo secondary changes; they become wide, irregularly dilated, with prominences on their walls, and in fact assume the characters of embryonal blood-vessels.

4. True, new formation of vessels may perhaps take a place when the primary inosculation fails. In such cases, the epidermis and the papillary bodies fall off after a little while, and the transplantation is believed to have failed; but this is not so, since the subcutaneous connective tissue with the remains of the sweat-glands remains adherent. After the lapse of some time, new formed epidermis appears where the transplantation was made, which may, perhaps, be due to the germination of the remains of the sweat-glands. Thiersch finally recommends a modification of Reverdin's plan—viz: that the surface of the wound to which the skin is about to be transplanted should have any granulations that may be found upon it shaved off, and the new skin applied in the course of a few hours.—*London Lancet.*

PHOTOGRAPHIC ENLARGEMENTS OF MICROSCOPIC OBJECTS.

By CARL SEILER, M. D., of Philadelphia.

The process of different workers in micro-photography, with all the minute details and description of the apparatus used, have repeatedly been published, so that I have to ask your indulgence for bringing again a new apparatus to your notice.

The first experiments I made in this direction were attended with very little success, which, however, did not discourage me. They were made with a complete microscope and camera,—that is to say, eye-piece and photographic objective were retained, while reflected sunlight was used for illumination. In continuing my experiments the objective of the camera and the eye-piece were found useless, and were discarded, and without them better negatives were obtained. The great objection was the motion which resulted from even the slightest tremor of the house, caused by passing wagons or by the walking of persons in rooms above or below. This motion and its consequences were removed to a great extent by discarding the body of the microscope, and by using the objective in connection with the camera, or, rather, a long wooden box. In this way the microscope and the camera were converted into one instrument. But two difficulties presented themselves in using this new form of apparatus,—viz., that of obtaining the picture on the ground glass in focus, and that of illumination of the object. The first was overcome by using a quarter portrait-tube, and putting in the place of the front combination a disk with a central opening, into which the objective was screwed, the back combination of the tube having been removed. Then by passing a resined cord over the mill-head of the tube I was enabled to bring the object in focus, being at some distance from it. This was done by pulling at the ends of the cord, and thus revolving the mill-head, which caused the approximation of the lens to the object. A stage was then constructed by extending an arm in front of the tube with a perforated plate at right angles to it, upon which the specimen was secured by clamps. For illumination, a large concave reflector was placed at some distance in front, and so bringing the light to a focus directly in front of the object.

This form of apparatus I did not find necessary to alter materially; all I did to improve it was to make the body of the camera of paper, and extensible, so that it can be lengthened to ten feet, and to add a movable stage, which, moved by long rods, enables me to bring any part of the object into the field. For the cord I substituted a rod and two friction-gear wheels, with which I can focus with considerable fineness. The main difficulty however, was, and still is, the illumination; and it was only after a long series of experiments that I could obtain tolerable results.

The first condition, at least for histological preparations, is that the light should be absolutely central. Even then the image on the ground glass will be a confused one, with bright lines and dark shadows, and single cells or blood disks will show three or four outlines, the rays of light being bent in their course through the object. It has been recommended to interpose a piece of ground glass between the reflector and the object, in order to diffuse the light, and so get rid of the difficulty. But I found that this does not answer the purpose, as it reduces the penetrating power of the objective, and also takes away the *crispness* of the picture, if I may use this expression. It does, however, flatten the field very considerably, and is of great advantage in vegetable and insect preparations, where the lines are comparatively coarse. Rendering the light monochromatic by means of a solution of ammonio-sulphate of copper contained in a glass cell obviates this trouble to a certain extent, and has also the advantage of bringing the chemical and visual focus almost in the same plane, as well as of absorbing the heat-rays which would otherwise destroy the object. As this solution becomes turbid if the cell is not perfectly tight, and as it penetrates almost any substance, I had at first considerable difficulty in keeping the solution clear. I now use a cell made of glass in the following manner: a hole is ground into a one-fourth inch thick piece of plate-glass, extending to the margin, with a conical opening. Then two pieces of thin plate-glass are cemented on each side of the thick glass by means of a mixture of glue and molasses. In this way a circular cell is formed, with a funnel-shaped opening on the top, through which the solution may be introduced, and then the opening closed by a tight-fitting cork. If now this monochromatic sunlight is concentrated by means of an achromatic condenser upon the object, the result on the ground glass is far better in every respect than without the condenser. It must, however, be used with caution, so as not to introduce too much light, as, in that case, it is impossible to give the sensitive plate the proper time of exposure.

The greatest advantage, however, I derived from introducing diaphragms into the condenser and objective, and also into the camera itself, in this way cutting off all superfluous light. As the German lenses, which I am compelled to use, do not allow the introduction of a stop between the front and back lenses, I fitted a cap with a small opening over the front lens, and another over the back lens. The stops increased the penetrating power of the objective considerably, and also make the picture appear on the ground glass almost as sharp and crisp as it is seen in the microscope itself.

It has also been recommended to take the focus on clear plate-glass with an eye-piece, because the surface of the ground glass is too rough to allow a slight difference in focus to be seen, while it is readily perceived in the negative. But focussing with the eye-piece is not only very tedious, but also more uncertain than even the roughest ground glass; at least it has proved so in my hands. I use for a focussing-screen a piece of plate-glass which has been varnished on one side, and then rubbed with alcohol, which makes it slightly turbid,—not enough to prevent transparency, but sufficient to make the picture apparent.

It is, as a matter of course, most important that only the best preparations should be used, the quality of the objectives being of far less importance. Most of the specimens which I used, and of which I placed a few photographs on the table, I obtained through the kindness of Dr. J. G. Hunt. The preparation of the negatives and prints is the same as in ordinary photographic work, with the exception that the negative cannot be made strong enough by mere development with iron, and has therefore to be intensified in order to print well.

It is hardly necessary for me to say that the advantages, both for teachers and students, which may be derived from good photographs of microscopic objects, are very great, as drawings, no matter how well and faithfully executed, always can give only that which the artist or draughtsman has seen; and we all know how very deceptive appearances in the microscope sometimes are, so that even those who are perfectly familiar with the instrument and object are often misled,—how much more easily those who are not familiar with microscopy, and who are only occasionally required to make a drawing of what they see in the instrument.

Micro-photography, however, is as yet in its infancy, and the results obtained are by no means perfect; but they are encouraging, and I hope that by perseverence pictures may be obtained which will be equal to the one formed on the retina of the human eye.—*Med. Times.*

MEASUREMENTS OF MOLLER'S PROBE-PLATTE.

By EDWARD W. MORLEY, Esq., of Hudson, Ohio. Read before the Memphis Microscopical Society.

In the account by Mr. Smith of my measurements of Moller's probe-platte, published in CINCINNATI MEDICAL NEWS of February, some trifling errors appear. They seem to be mistakes in making the copy sent Mr. Smith. Under No. 17, Cym. Ellipt. read "26............62.7," in place of "31............61.5." The latter line was an observation seen at the time of making it to be faulty; it was cancelled and another observation made at once. Under No. 18, the numbers 82.2, 81.1, 79.4 were copied from the wrong one of two adjacent columns. They should read, 80.4, 79.3, and 77.6. Under No. 19, the number counted in the second line was 25.

All the measurements, except No. 16, were made under precisely the same circumstances. In No. 16 the micrometer was held, not in the microscope tube, but in a separate stand, so that the manipulation of the micrometer should communicate no vibration to the image. In this way, the distance from object to micrometer was increased three-fourths of an inch, which was remembered in the computations. A 1-16th immersion by Tolles, monochromatic sunlight from a heliostat, and blue glass in a dark room were used in all, for the sake of having all measurements most strictly comparable. A cobweb micrometer of Troughton and Sims, with position circle for angles; and eye-piece magnifying, with the 1-16th adjusted for cover by No. 20 of the probe-platte, about 2500 diameters, was employed by setting two wires at such a distance apart as to include a whole number of striæ. The intervening striæ were then counted twice, unless otherwise specified. Sufficient care was taken to exclude errors in reading the micrometer. The resolution was so satisfactory that no uncertainty could occur in the counting; it has been found not very difficult to measure No. 18 by lamp-light direct from mirror, with the same micrometer and eye-piece used in the same manner.

It seems to me that the measurements are *relatively* accurate within about one per cent. The varying values given for some diatoms on the probe-platte are owing to actual variations in fineness on different parts of the frustule.

The value of a division of the micrometer under the conditions used in work on the probe-platte was obtained by comparison with three stage micrometers. The first was a 1-10th in 1-100ths and 1-1000ths by Queen. It was not satisfactory owing to unevenness of graduation and raggedness

and coarseness of divisions. Another was a millimeter in a hundred parts, mounted in brass, which was tolerably even in its graduation. The third was a Paris line in one hundred parts, obtained from Chevallier of Paris, which was the most satisfactory. The micrometer was compared with the whole length of the graduated line, so that any unevenness should have no effect. And the length of the line was compared by using low powers with a good steel scale of 200 millimeters in 1-5ths.

It seems to me probable that the adopted value was much within one per cent. of the truth.

The measurements were all made at one sitting in September, 1872, under favorable conditions; and the computations were made at once thereafter.

Please say to the members of your Society, that if any of them will forward other specimens of the probe-platte to me by mail, I will measure them and return in a few days. I make the offer, because I should like to ascertain within what limits fair samples of these diatoms, such as Moller selects, are likely to vary in the fineness of their striation, and thus test the value of Mr. Smith's suggestion that they may be used as a stage micrometer.

SOME LATE OBSERVATIONS IN HISTOLOGY OF DENTAL TISSUES.

By HENRY S. CHASE. Read before the Illinois State Dental Society, May, 1875.

In November, 1874, while making and studying some recently prepared specimens of human dentine, for the purpose of demonstration before the class of the Missouri Dental College, I found some very interesting appearances.

Several deciduous teeth having undergone more or less resorption of their roots showed a change of structure far from the territory undergoing resorption on the outside. Obliteration of the dentine *tubes* seemed to be the first change. The field of change became hyaline, clear as glass almost, and without histological character, so far as the recognized dental tissues are concerned. Afterward this hyaline field became the seat of large cells, and clusters of cells, rounded, and with or without a nucleus. These cells varied in size from the 1-5000 to 1-1000 of an inch in diameter. Sections made from a portion which was, to the naked eye, undergoing resorption, showed many cells much larger than these.

I began to ask myself questions. Do these cells in a distant portion from the apparent seat of resorption indicate that *cells* are a permanent part of dentine? I did not know for several months afterwards that Prof. Owen had written that "dentine is made up of tubes and cells." I began to take greater interest in dental histology. After having made and studied over one hundred specimens for the microscope, I found what I thought were cells *in* the dentinal tubes, or *between* dentinal tubes. Thinking I might be mistaken, and that my eyes had been influenced by my imagination, I determined to multiply facts, if the cell in dentine was a fact. My 225th specimen so delighted me that I took it to my friend, Dr. Rumbold, a very reliable and noted microscopist, and asked him to tell me what appearance the specimen had to his eyes. With his own microscope he examined it, and described its cellular appearance, saying, "I never saw anything like that before in dentine." This specimen is recorded in my catalogue as "upper second molar, from a boy fourteen years old; roots not quite perfected in length. Not decayed. Root, cross section. Cells in

rows forming dentine rods or tubes (?) 200 and 400 diameters. Seen by blue north sky light."

As I proceeded, and specimen No. 250 was reached, I found the same appearance over the whole field. My catalogue says: "No 250, upper bicuspid; sound; from girl aged seventeen years. Treated with dilute acetic acid twelve hours. From the middle of crown, longitudinal section. Dentine tubes filled with cells."

The cells were close together, forming a dark line or rod with one focus, and with a slight alteration the continuous rod was resolved into cells of the same diameter as the rod, closely in contact, and flattened a little at place of contact.

Since making this specimen I have gone on with my work, and now, April 16th, 1875, count four hundred and seventeen specimens of crown and roots of human teeth. I have been so eager to multiply facts that I have not taken time for the deeper study of what I have discovered.

Of the one hnndred and fifty specimens made and examined since that numbered 250, I find seventy-three marked cellular. All of these are from the teeth of persons not over seventeen years of age.

These cells, as I have before remarked, are of the same diameter of the dentine tubes, and seem to be a portion of these tubes. Sometimes they are seen with the focus of the instrument adjusted for the *surface* of the specimen, and at other times the focus is for a little deeper portion. Some rows of cells appear to be entirely distinct from each other, although in contact; and other rows of cells seem to communicate with each other at their place of contact, by a loss of a greater or less portion of their proximate walls. The territory between the rows of cells seem not to contain these organs. The appearances of cellular dentine is quite different from the field of cells in resorption of dentine or cementum. In the latter they are much larger, and occupy the field in an irregular manner. Cells here are not arranged in rows. I have found lakes or spaces more abundant and constant in "cellular" than in other teeth. In cellular dentine it is generally the case that only portions of a specimen show this condition. In other specimens the whole field is of this character. They are to be seen forming not only the main body of the dentine tubuli, but are equally apparent in its branches. These cells vary in size according to the diameter of the tubuli, corresponding to its gradually decreasing diameter, from its origin at the pulp cavity to its termination at the enamel or cementum border.

This cellular appearance must be a normal condition, for it is observed in teeth which are perfectly sound, and extracted for no disease in the tooth itself. Several of my specimens were taken from teeth extracted for irregularity. The age of the tooth seems to have much to do with cellular dentine. It is found more constantly in the *roots* of teeth which have but just finished their length of growth, or are yet imperfect in this respect, though the cellular condition is not at all limited to the portion last formed. In cutting up a root for specimens, I make from six to ten sections. If there are six sections, I call the one nearest the termination of the root the first one-sixth, the second one-sixth, &c., and so mark and catalogue them, thus enabling me to locate the exact portion of the root from which the section was made. In a somewhat similar manner I mark and record sections of the crown.

What do these facts indicate? I suppose I only perceive a mere glimpse of the whole tooth; but to my mind they seem to show that rows of cells are the original condition of dentine. That it is a pre-dentinal tubuli formation That dentinal tubes are formed first by cells placed in contact and

arranged in regular dentinal lines; after which resorption of their proximate walls takes place and a *tube* is formed. Further, the indications are that a more or less cellular condition is permanent, and this permanency is made use of in the process of resorption of deciduous or permanent teeth.

Further, that these cells, with sheir power to multiply, to work, may cause cavities within what is called sound teeth, and it is not very improbable that interglobular spaces, and lacunæ are thus formed.

Further, that resorption of dentine beneath metallic plugs, introduced for arresting dental decay, sometimes exposihg the pulp, may be caused by the active work of these cells. Will these discoveries lead to any useful results? That time will only determine. A truth discovered or reproven is a valuable result in itself. Nothing is so noble as Truth.

Continued study of this subject may prove that the Dental Operator is not so responsible for *results* as has been supposed. His responsibility may be measured somewhat by that of the general surgeon. Vital phenomena may impair his efforts in saving the teeth.

In the end better results than at present may be attained by using something within the cavity of decay which shall be in harmony with an active vital tissue, avoiding a contact which shall stimulate resorption.

Is it not probable that some plugs fail by resorption of the dentine in contact with the plug or filling? It is well known that metalic plugs fail in the deciduous teeth with a hundred fold more frequency than in the permanent teeth. Is it not probable that it is the greater active vitality of this temporary tissue. It is well known also that the permanence of plugs in permanent teeth corresponds in a great measure to the age of the tooth, being much more lasting in the adult than in the child's mouth. This fact has been heretofore ascribed to other causes, but I think the unperperfected condition of the dentine is the real and most constant caúse.

In some *diseased* conditions of the teeth I find *cellular* appearances very different from those which I observed in undecayed and healthy teeth This is a study to which I promise myself the pleasure of devoting much time in the future. I am now collecting facts which I hope to make useful. Decayed teeth, or their territories of decay, have peculiar cellular appearances which have been described by European authors as leptothrix. I find these appearances in specimens in my possession, but have not yet had time to study them.

Teeth which have been diseased by pericementitis or pulpitis have also some cellular appearances which need study. At preseut I do not know what they indicate.

ON THE GENUS ARACHNOIDISCUS.

By Fred. Kitton, Norwich, England.

The species of Arachnoidiscus are the following:—*A. Ehrenbergii*, *A. ornatus*, *A. Grevilleanus*, *A. Hardmanianus*, *A. Indicus*=*A. Ehrenbergii.* The form figured and described by Mr. Shadbolt is the second in the list, and is apparently more widely distributed than *A. Ehrenbergii.* It is distinguished from the latter by the transverse costæ between the radiating lines; those near the margin are irregularly branched, resembling the venation of the leaves of a dicotyledonous plant; the spaces between the costæ are delicately punctate, the puncta becoming larger as they approach the centre.=*Hemiptychus ornatus* (Ehrenberg), *Arachnoidiscus Japonicus* (Shadbolt), *A. Nicobaricus* (Ehrenberg), *A. ornatus* (C. Janisch, in "Zur Charakteristik des Guano's von verschiedenen Fundorten," p. 12, Taf. 1. fig. 3 South Africa, Nicobar Islands, West Coast of S. America.

Arachnoidiscus Ehrenbergii may be easily recognized by the absence of the transverse costæ, the large irregularly-shaped granules between the radiating lines. The granules, when examined with oblique light, appear to consist of closely-packed beads. *A. Indicus*, Ehrenberg, "Microgeologie," Puget's Sound, Monterey Stone, Vancouver's Island.

The form figured in the Synopsis is probably the above, but there can be little doubt that it never lived in any British locality; moreover, the form figured was not from the photograph of De Brebisson's. Tuffen West told me that the drawing was made from an actual specimen. This fact accounts for the non-agreement of Smith's generic characters with the figure.

Bailey, in a letter to Dr. Arnott (Walker Arnott on Arachnoidiscus, *Quart. Journ. Mic. Soc.*, vol. iv. p. 161), says, "I see that Smith in his Brit. Diat. gives me as the founder of the genus. This is not correct; but the species is mine, and is very different from *A. Japonicus, with which Smith confounds it.*"

Arachnoidiscus Grevilleanus is a rare species occurring in the Barbadoes deposit; it possesses the radiating costæ characteristic of the genus, which reach nearly to the centre of the disk; alternating with these are shorter rays, above one-third of the length of the principal rays, but the central smooth space surrounded by a circle of elongated cellules is wanting, the centre being occupied by a little star composed of five or six minute elongated cellules. The margin of the valve has several rows of small cellules, which become larger midway between the centre and margin, and again becoming smaller and scattered as they approach the centre. (Greville, in *Trans. Royal Micro. Soc.*, vol. xiii, p. 47, pl. v. fig, 7.)

The last species of this genus was placed by Dr. Greville in his genus *Stictodiscus*, but its affinities, judging from his figure and description, are with the present genus. As I have never seen this species, I can only give Greville's specific characters.

"*Stictodiscus Hardmanianus.*—Large; radiating compartments numerous, reaching nearly to the centre, with five to six rows of minute puncta at the base (margin of valve), followed by a single row of pseudo-spores; centre occupied by two circles of granules, and a minute cluster at the umbilicus; diameter .0050″. Monterey deposit. Mr. Hardman."

It will be seen from the above description that this species only differs from the type forms in the absence of the circle of elongated cellules, and which are represented by a circle of large moniliform granules.

The probability of the specimen of Arachnoidiscus being a British form is to my mind very doubtful, although two cases have been published of its occurrence; viz., one frustule by De Brebisson, as cited in the Synopsis, and one by Captain Hutton, F. G. S. (*Quart. Journ. Micro. Science*, vol. v. n. s., p. 132). If this form had really lived on our coasts, more than three specimens would have been discovered in thirty years. Captain Hutton's specimens were supposed to have been in a gathering made from a small brackish waterpool at Malahide, but were probably attached to the test-tube in which the gathering had been boiled. The writer remarks that he had not cleaned any material containing Arachnoidiscus for ten months, and the tube had been in constant service; still it is more probable that these specimens had become detached from the tube, than that they had lived in the pool.—*Science Gossip.*

SAN FRANCISCO MICROSCOPICAL SOCIETY.

The stated meeting of the San Francisco Microscopical Society was held on Thursday evening, June 3, President Ashburner in the Chair. Mr. T. E. Jewell was present as a visitor.

Additions to the Library were announced by the Secretary in the way of the May number of the *Monthly Microscopical Journal* and three numbers of the *World of Science* by subscription; also the *Overland Monthly*, presented by the publishers, and the April and May numbers of the *Western Lancet*, from Dr. A. B. Stout.

Dr. Stout also donated an apparatus consisting of stand and receptacle for collecting sedimentary deposits from fluids.

Mr. Ewing donated three slides mounted with spicules of sponge, showing the characteristics of *Geodia*, *Pachymatisma* and *Spinulate.*

Dr. Burgess presented two slides, mounted by him: the vertical section of uterine fibroma, and foraminifera, the latter showing some four or five varieties.

Mr. Kinne donated a slide, mounted by him, for the polariscope with sand from Monterey beach, and which, moving in the medium, looked like a rainbow broken into fragments.

The new revolving table ordered by the Trustees was placed in the rooms, and in use for the first time, and answered every purpose admirably. The movement was steady, with none of the jarring so annoying to microscopists. It was constructed under the supervision of Mr. Ewing, and is a fine specimen of cabinet work, and, with the stationary rim to hold slides, etc., in front of the observer, as suggested by Mr. Kinne, is about as complete an adjunct for a Microscopical Society as one often sees.

Letters from Dr. Thacker, of Cincinnati, and Prof. Farlow, of Boston, were read by the Secretary. The latter referred more particularly to the nostoc found at Prattsville, Plumas County, California, and brought to the attention of our Society by Dr. Harkness some time since, and which had been sent to Prof. Farlow for identification, who had in turn forwarded it to M. Thuret, of France. The latter gentleman pronounced it N. Verrucosum, in regard to which Dr. Harkness made the following observations: "Although M. Thuret is, I believe, the highest known authority upon the nostochaceæ, yet I think he is in error in pronouncing the one spoken of as a Verrucosum. We have in our collection a nostoc which was presented to the society by Mr. J. P. Moore, possessing all the characteristic of the N. Verrucosum. These were found in a running stream near Harbin's Springs, and were firmly attached to the stones. They also contain a central cavity, while the one from Prattsville grows unattached upon the sand, is convoluted, and without a central cavity. The microscope reveals a marked difference in the arrangement of filament cells and "heterocyst."

Dr. Harkness favored the society with a valuable paper, which was attentively listened to, and, no doubt, will be read with interest, on the subject of "Potato Rot" which we give on page 309 in this issue of the NEWS.

A MATCH UNDER THE MICROSCOPE.—Those who are fond of investigations with the microscope, will find a beautiful object in the head of an ordinary parlor match. Strike the match, and blow it out as soon as the head has fused sufficiently to cause protuberances to form on it; on that part of the head which took fire first will be found a white, spongy forma-

tion, which, under the microscope and with a bright sunlight on it, has the appearance of diamonds, crystals, snow, frost, ice, silver, and jet, no two matches giving the same combination or arrangement.—*Scientific American.*

Correspondence.

CINCINNATI HOSPITAL.

JONES STATION, O., June 23, 1875.

HON. M. B. HAGANS, *Member of the Board of Trustees of the Cincinnati Hospital:*

DEAR SIR:—You must permit me to call your attention and the attention of the Medical Profession to the report of Drs. A. S. Dandridge and David Judkins, who constituted the Committee to report on the reorganization of the Cincinnati Hospital staff for the ensuing year.

While I do so you will keep in mind, as a fact, that these "leading spirits" are the champions of two medical cliques, each of which trains around its respective medical college organization; and you will observe that they seem to have been appointed on your board to promote in the hospital the interests of these colleges, and, as far as possible, the ruin of all competing ones. How faithfully and fearlessly they have performed the service to which they were assigned let the history of the hospital declare. No one untrained in wrong could be guilty of such gross injustice as crops out of the report made by this committee to your board.

To better understand the report it must be remembered that the committee was composed of the representatives of separate and conflicting interests, which on the surface have united for a purpose. Dr. David Judkins represents the Miami Medical College, and Dr. A. S. Dandridge the Medical College of Ohio.

The report recommends Drs. Murphy, Mussey, and McKenzie of the Miami faculty, and Drs. Graham, Dawson, and Conner of the Ohio faculty. The remaining ten to complete the staff were selected from that part of the medical profession not connected with medical college teaching, and is, for the most part, composed of relatives and intimate friends of the members of your board.

Here let me remind you of the fact, with which you must be familiar, that the faculty of the Medical College of Ohio have no interest in the clinical advantages of the Cincinnati Hospital. Their students do not patronize it because the faculty claim to have ample facilities elsewhere, with which they profess to be satisfied. Their interest is therefore best served when the clinical facilities of this hospital are most damaged, hence it is not strange that Drs. Graham and Dawson declined the honor, and were not appointed. The report does not recommend an equal representation from other medical colleges.

Is this right? Can this report and the action of your board on it be defended on Christian principles? If not, has not the time come when you should abandon the leaderships of these schemers? Did not Dr. Judkins play the role of the Quaker preacher, and under the assumed inspiration of the spirit, did he not speak of love to God and peace and good will to man? On another day did he not join what might be called a conspiracy against Dr. M. B. Wright, a gentleman whom your board has often

honored? Over his own signature did not Dr. J. declare that Dr. W. was "notoriously unpopular among his professional brethren at home?" Afterward was he not proselyted to Presbyterianism under the exegetical teaching of the chaste (?) Rev. Dr. Thompson, whose amorous relations with his ward and niece were the foundation of a church scandal? And now does he not seem to be conducting a conspiracy against a medical college, which stands in the way of the one he has championed? Did not Dr. Dandridge, in 1851, join the conspiracy against Dr. Wright, and in 1874, at the time he entered your board, did he not join the conspiracy against the college.*

Why should you continue to take your moral drill from such corporals? Sooner or later they will cloud your good name and bring your works to confusion. Remember, wrong and injustice will not always triumph.

The fact may not have escaped your memory, that a few years ago members of your board made an effort to fix the impression that members of staff were always selected on account of eminent professional ability, and without reference to medical college faculties. At the time I branded the statement as untrue, and now this report removes the mask, and reveals the deformity of the insulting falsehood. The selection of three members for your staff from each of two medical colleges, and none from a third one, which was equally worthy, is not a mere coincidence, but the result of a bargain in which the merits of medical colleges were canvassed. Is there any one acquainted with the facts who believes that if the relations of Drs. Miller and Mussey to the Miami College had been reversed, the former would have been retired to give place to the latter? Now, I presume, there is no member of your board or your staff who will dare say that Dr. Miller was not qualified for the place on the staff he held, but he was not a member of the Miami College faculty, hence he must be retired to give place to Dr. Mussey, who is. Dr. Miller is unfortunate in having no father in your board to protest against the removal of the son.

Let me be understood. I want no prevarication on this subject. I do not object to the three gentleman selected from the faculty of the college represented by Dr. Judkins, nor do I object to the three from the one represented by Dr. Dandridge, but I do claim that justice, the interests of the hospital, of medical education, of the tax-payers, and the peace of the profession, all demand that three members from the faculty of the college ignored by your committee, which is without a clique, and has no champion in your board, should have been recommended.

R. C. S. Reed.

Editorial.

Reorganization of the Staff of the Cincinnati Hospital.— The staff of the Cincinnati Hospital has been *reorganized*. We had heard of the intention to *reorganize* it a month before it happened. Our friend, Dr. David Judkins, of the Board of Trustees, has always been a *reorganizer*, and no doubt will always continue to be, so long as he considers that he can thus subserve his personal interests. At one time, while engaged in an effort to *reorganize* the Medical College of Ohio, by expel-

* See Medical News vol. iii. p. 565.

ling Dr. M. B. Wright from the Faculty, he wrote to Dr. Vattier a letter for publication, in which, among other things, he says of Dr. W.: "He is, in my opinion, notoriously unpopular among his professional brethren at home."

The *reorganization* of the Hospital consisted in vacating all the positions on the staff, and then re-electing all the old members but one, Dr. B. F. Miller, Dr. M. has been a member of the staff for several years, and we have never heard of any complaint of his services. In fact, it is said of him that he was noted for his attentiveness to his duties and his desire to please. But merit must not stand in the way of *reorganization*, if self-interests are to be subserved thereby; that is, in the estimation of the present Board of Trusteee.

A *reorganization* of the staff of the Presbyterian Hospital of New York recently took place, and four of the old members were displaced by the appointment of four new men. A protest, signed by sixty of the leading physicians of New York, has been published in the papers, and in the *New York Medical Journal*, protesting against what they termed a flagrant act of injustice, by which four of their brethren, who had been serving a public charity gratuitously, had been dropped without any cause being alleged for the act. The *Medical Record* of June 12, in a lengthy editorial, thus expresses itself:

"The deposed gentlemen may or may not have merited the punishment which they have received, but this is not the question at issue. The profession merely view these gentlemen in the light of exponents of a principle, the vindication of which is dear to every one who holds a hospital appointment, or expects to be a candidate for such a distinction. It is the question of right which any managing board has of ignoring past services of a medical staff, of publicly severing their connection with a hospital without the acknowledgment of any obligation to state the reason therefor. The profession has a right to feel a deep interest in this matter, as it involves the surrender of reputation, respectability, and individual rights, into the keeping of men who are not willing to acknowledge their worth, even if they may admit of their existence.

* * * * * * * * * * * *

"That the protest of the sixty outsiders is not a blind endorsement of the four gentlemen who have been displaced is evident from the fact that the majority of the old medical board of the hospital have signed protests of similar import, and presented them to the managers. This being the case, if the managers persist in refusing to consider the protests in question, there is, it seems to us, but one of two courses for the staff of the hospital to pursue—either to resign, or to give some good reason why they remain. From what we know of the gentlemen who took the four places, we are free to say that they must have satisfied themselves that it was right and proper so to do; but they also, under the circumstances, owe it to their brethren either to state the reasons for their acceptance of the positions, or to resign. Altogether the present medical staff has been forced into a very undesirable position—one which involves a good deal of responsibility to the profession. It is nothing more nor less than the vindication of a principle, and their brethren are anxious to know if they are equal to the occasion. The next meeting of the board of managers will determine whether any answer will be made to the protests, and if none is offered, the time will have arrived either for a general explanation from the staff, or a general resignation."

Now if, in New York, discharging a physician from a hospital staff, on which he has been serving gratuitously for the benefit of the poor, without

giving any cause of complaint, but leaving it to be inferred that it was for incompetency or misbehavior, is *such an outrage* on the whole profession that all the members of the staff should resign, the same is true in Cincinnati; but we fear that the present members of the Cincinnati Hospital staff are too anxious for position to have any feeling of honor in the case. To be *hospital doctors,* they are willing to be the creatures of Judkins, Dandridge, etc.—to be expelled in disgrace at any time those worthies see proper to do so.

Physicians are altogether too ready to labor gratuitously; seeming to put no value on their services themselves, they find others not valuing them. There is a marked contrast in this respect in the conduct of lawyers and physicians. In illustration we will mention that the Hon. Judge Hagans, one of the Trustees of the Hospital, during the late ladies' temperance "crusade," was a member of their advisory committee, with a number of clergymen and other Christian gentlemen, and, of course, was daily urging the ladies on in visiting wicked liquor saloons, and annoying the proprietors with their singing and praying. In due course of time the ladies were arrested by the police, and marched before the police judge. Our Hon. Judge was sent for, and made a short moral harangue, and the ladies were discharged, with the injunction not to trespass any more. Did the Hon. Hagans make no charge in this case, in which he was rightfully, in the countenance he had been giving the ladies and in offering up prayers for their success, a *particeps criminis?* By no means. The mere consciousness of doing a good work was not a sufficient recompense. He sent the ladies *a bill for one hundred dollars, which they paid.*

But we have not space to dwell longer on this subject. We will only say that under the present management, the Cincinnati Hospital will soon cease to be used for clinical instruction. The colleges are so building up their dispensaries, and obtaining clinical material in other directions, that they are becoming quite independent of the Hospital.

THE CINCINNATI COLLEGE OF MEDICINE AND SURGERY.—The Cincinnati College of Medicine and Surgery recently closed its spring and summer session—the thirty-eighth course of Lectures. The Commencement Exercises took place Tuesday evening, June 22, at the College Building on George street. The large lower lecture room, notwithstanding the oppressive heat, was crowded with ladies and gentlemen.

The exercises were opened by prayer by the Rev. W. I. Fee. Prof. Bramble, the Dean, then introduced the Rev. James Y. Boice, pastor of the First Reformed Presbyterian Church, who delivered a very able address. He spoke of the high estimation in which the physician was held in the early history of the world, quoting from the old testament of the Bible in evidence. He drew attention to the fact that Christ added to his office of the great teacher of salvation that of the physician, and was constantly engaged, while on earth, in healing diseases. He urged a close relation between the minister and the physician, and pointed out how by a harmonious working, the highest good of the individual in body and soul would be advanced. He spoke in high terms of the self-sacrifices of physicians for the suffering, and commended the disinterested practice of the regular profession in never keeping secret for gain any knowledge they may have acquired, that would contribute to the relief of suffering humanity. The address at its close received the hearty plandits of the audience.

The conferring of the degrees was very gracefully performed by Prof. G. W. Harper, of Woodward College, Vice-President of the Board of Trus-

tees, the Rev. F. S. Hoyt, D. D., the President, not being able to be present.

After the conferring of the degrees, Prof. And. C. Kemper, on the part of the faculty, delivered the valedictory address to the graduating class. It was an extemporaneous one, well delivered, and was received by the graduates and the audience with much pleasure, their approval being manifested by a round of long continued applause.

The exercises were closed by the benediction by the Rev. W. I. Fee, everyone feeling that the evening had been most pleasantly spent.

The following is a list of the graduates, thirty in number.

NAME.	THESIS.	RESIDENCE.
BEATTIE, JEREMIAH	Typhoid Fever	*Michigan.*
BEATTY, GEO. F.	Abnormal Labor	*Missouri.*
BLISS, J. CLARK	Rheumatism	*Wisconsin.*
COSGROVE, SYLVANUS F.	Causes Predisposing to Uterine Diseases	*Ohio.*
CARR, WASHINGTON M.	Rubeola	*Missouri.*
COOPER, ALBERT	Tubercle	*Kansas.*
COPE, CHAS. S.	Cerebral Apoplexy	*Ohio.*
COX, TRUMAN H.	Scarlatina	*New York.*
DULANEY, BENJAMIN A.	Psychology	*Kentucky.*
ELDER, ALFRED L.	Ovariotomy	*Pennsylvania.*
FLIPPEN, JOSEPH A.	Qualifications and Duties of a Practitioner	*Kentucky.*
FLEMING, WILLIAM L.	Fractures	*Pennsylvania.*
GRAY, JAS. H.	Fracture of the Neck of Femur	*Canada.*
HAMILTON, JOHN C.	Menorrhagia	*Ohio.*
HEADY, WM. SHIELDS	Neuralgic Dysmenorrhoea	*Indiana.*
HETHERINGTON, GEO. A.	Aneurism	*Canada.*
HOBBS, PHILIP M.	Opium	*Kentucky.*
LAMB, COLBY	The Relations of Chemistry to Medical Practice	*Massachusetts.*
MACFARLANE, THOS.	The Theories of Inflammation	*Wisconsin.*
MILLER, JAMES M.	Necrosis	*Pennsylvania.*
NOBLE, HOMER C.	Valvular Lesions	*Pennsylvania.*
POCOCK, DANIEL E.	Etiology of Fever	*Ohio.*
RUSSELL, WILLIAM	Uterine Diseases—Cause and Treatment	*Michigan.*
SAVAGE, EDWARD W.	Diarrhea of Infants	*Iowa.*
THOMPSON, EDWIN	Tonsillitis	*Louisiana.*
THURSTON, DAVID M.	Ovulation	*Ohio.*
WHITMER, DAVID M.	Menstruation	*Ohio.*
WYMAN, CHAS. P.	Scarlatina	*Indiana.*
WRIGHT, H. J. B.	Coarse Lesions of the Brain	*Indiana.*
WINTERMUTE, GEO. J. C.	Typhoid Fever	*Ohio.*

PROF. A. J. MILES, M. D.—This gentleman, Professor of Diseases of Women and Children in the Cincinnati College of Medicine and Surgery, will return from Europe the coming fall in time to resume his collegiate duties. Our readers are aware that Prof. Miles went to Europe last summer for the benefit of his wife's health, who was suffering with phthisis. They spent the winter at Menton in the south of France, on the shores of the Mediterranean. We regret to say that Mrs. Miles died on the 28th of April last—not receiving the benefit from the trip that was anticipated.

As a singular coincidence we will mention that on the day that Mrs. Miles died at Menton, her brother, Geo. E. Stearns, a young lawyer, died near this city.

The many friends of Prof. Miles will deeply sympathize with him in his great bereavement.

LEGAL TESTS OF THEOLOGY.—Among the many questions which courts are called upon to decide in modern times relating to man and his relations to the internal as well as to the external world, or, in other words, his *faith* in that of which he has no legal proof, the most singular is that now about to be brought up before an English court, relating to the "efficacy of prayer" as a cure for disease, in place of proper medical and sanitary treatment.

A child was taken sick, and one of the "praying doctors," as some of the more irreverent practitioners and "faith by works" persons term them, was called in; he prescribed, not drugs or other medical treatment, but prayer. The result was, the child died. A coroner's inquest was held, and the verdict was that "death was caused from want of medical treatment." The consequence is, that the "praying doctor" will be tried for manslaughter. His defense in such a case can be more easily imagined than described. It does not as yet appear of what religious denomination or faith the accused is, or what prayer he prescribed; whether it was without form and therefore void; or whether it was a "regulation" prayer duly approved in form by a convocation of divines; or whether the dose was not repeated often enough, or whether it was an overdose which left no time for food or other treatment; or whether the persens who administered it were wicked, and therefore it availed nothing. The jury may disregard all these important questions, and decide that the accused was either insane or of weak mind, and therefore is irresponsible before the law.

The testimony of experts in the questions involved will necessarily include not only physicians and scientists, but theologians of various beliefs and doctrines.

In any event, the trial and result of it will be of more than ordinary interest to the medical profession and the various religious believers, whose faith and observation are almost daily called upon in similar emergencies. The verdict of an "intelligent jury" in this case may set the matter at rest in many doubting minds.—*Eng. Paper.*

CREDIT.—The article in the June number of the NEWS by Mr. Samuel Wells, of Boston, entitled Wenham's Reflex Illuminator, should have been credited to the *Boston Journal of Chemistry.*

Physicians in the West should notice the advertisement of Mr. Ernst Zeuschner of this city. Mr. Zeuschner manufactures all kinds of electrical and galvanic apparatus, and repairs the same. He is also prepared to repair microscopic apparatus, and to make any changes in stands that may be desired. All work entrusted to him will receive careful attention, and charges will be made reasonable.

MICROSCOPE FOR SALE.—A Beck instrument in good order. Has two inch, one and one-half inch, and one-fifth inch objectives; achromatic condenser, paraboloid, and other accessory apparatus. Will be sold at a reasonable rate. Address editor of MEDICAL NEWS.

THE

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Original Contributions.

IS THE MUCOUS MEMBRANE OF THE UTERUS THROWN OFF AT EACH MENSTRUAL PERIOD? IF IT IS, WHAT ARE ITS SOLVENTS?

By JAMES BARNSFATHER, M. D., of Cincinnati.

These are questions which, to the ordinary practitioner, would seem of little moment, but to the physiologist and scientific gynæcologist, they are matters of great importance, and have been for some time past studied with great care, as, upon the proper solution of these problems, hangs the *only* key to the proper diagnosis of all the diseases of the uterus. In fact, I may, with truth, state that all the diseases that have their origin in the uterus can primarily be traced to an imperfect physiological action in the membrane. Let us take membranous dysmenorrhœa as an example. Here we have nature trying to throw off the membrane in the natural way, viz: 1st. by fatty degeneration; 2d. by disintegration and solution; but, owing to some obscure cause, she cannot do this; therefore she brings on *spasmodic contractions* of the muscular fibres of the uterus, and so squeezes off the membrane entire (in an analogus manner to detaching the placenta), when it is forced into the vagina, and carried off (mechanically) by the hemorrhage consequent upon the extraordiuary efforts of the uterus.

Dr. Barnes says, so long as the function of menstruation is accomplished normally in all its conditions, there is nothing to disturb the harmonious balance of the nervous system. But let the function be attended with pain, shock to the nervous centres is inevitable, and it is then only a question of time how long it will be before the healthy equilibrium is overturned, and morbid deviations of nervous energy become manifest. The time of resistance will vary with the absolute and relative force of the two factors at work. If we look upon the nervous centres as the resisting or conservative power, it is obvious that, where the nervous system is robust, pain will make less severe impressions and slower inroads; and that, on the other hand, where the nervous-centres are very susceptible, pain is felt more acutely, and will sooner break down the conservative resistance. Dysmenorrhœa at first leaves but an evanescent depression; after a time the prostration and nervous irritability are continuous, only remitted in degree; later still, attacks of hysteria, neuralgia, and other nervous disorders are developed, and the general health breaks down under the continual wear and tear, and *perverted distribution of nervous power*. The truth is, that

difficult menstruation so exhausts the tone of the nervous centers, that general or local hyperæsthesia is almost certain to follow. Many women complain of a distressingly exaggerated sensitiveness all over the skin; in some it takes the form of neuralgia of the face and breasts; in some the seat is in the uterus, vagina, or vulva. I think observation warrants the general conclusion that the healthy, well-formed uterus is rarely an "irritable uterus," or associated with dysmenorrhœa.

In nature, as a general rule, we find that all blood vessels have nerves which follow them, and ramify as they do down to the capillaries. It is also an acknowledged fact that the blood vessels are governed by the nervous influence which is brought to bear upon them by those nerves. It is also by means of the nervous influence that all the functional changes take place. How could the heart act without its nervous influence? or the liver, or stomach, kidneys, etc. etc.? Cut a nerve which supplies the stimulus to any organ and you will find immediately the organ ceases to act.

In a previous paper I gave a condensed statement of my views of the periodical physiological changes which take place in the mucous membrane, as viewed microscopically, after careful and protracted investigation. I now wish to bring forward other evidence, in order to prove by authorities and otherwise, that those changes actually take place, and that they are entirely under the influence of nervous power. Let us examine the mucuous membrane of a female who has died while menstruating. What do we find? We find it swollen and congested; to the touch soft and velvety, and in appearance of a dark brown color. A transverse section shows the capillary blood vessels, and also small white bodies, stretching through the substance of the membrane from the muscular portion of the uterus to the inner surface. These are the utricular glands. There is also a substance surrounding these, which I consider to be the nervous portion of the membrane, or the net work of capillary nerves. This, I believe, partly aids in the solution of the membrane by its disintegration, as we find remains of the delicate nerve fibres in *some* menstrual liquids when examined microscopically.

In his work on diseases of women, Dr. Barnes states that the non-menstruating uterine mucous membrane is of a grayish or rosy white color. Its thickness in the inter-menstrual period, in general, does not exceed .04 inches; during the menstrual periods it swells and may even exceed .12 inches. Two distinct layers compose it, an epithelial and a basement layer. The latter encloses in its substance glands, blood vessels, and nerves. In speaking of the arteries, he says that the ultimate ramification of the arteries of the uterus are distributed in the mucous membrane; beneath the epithelium they form a capillary net work very fine and close, the interspaces of which receive the orifices of the glands. The nerves proceed from the renal plexuses and inferior mesenteric, being closely bound to the utero-ovarian arteries; others, proceeding from the hypogastric plexus, are formed by some anterior branches of the sacral nerves, and by branches from the lumbar ganglia of the great sympathetic. These two plexuses anastomose in the the broad ligaments, and send off filaments over the surfaces of the uterus, which penetrate into the substance of the organ, *keeping in intimate contact with the arteries*, or coursing in the spaces between them.

Dr. Snow Beck says, that *in every case* the nerves of the uterus are constantly accompanied by a very fine arteriole.

On the advent and characters of the discharge, etc., etc., Cazeaux states that the young girl first complains of lassitude, of a sensation of swelling and tension in the lower part of the abdomen, of lumbar and sacral pains,

of weight in the loins, of heat in the hypogastrium and peritoneum, of a slight itching and tumefication in the genital parts, and a painful swelling of the breasts. In many cases the excitement is so great as to produce a violent general reaction. Strange nervous disturbances not unfrequently occur, and I have sometimes observed attacks of genuine hysteria. These symptoms may last from one to eight days, and are then followed by a more or less abundant flow of mucus, in the course of a few days this becomes mixed with a little blood, which soon gives place to a flow of blood. The symptoms which heralded the first menstrual flow do not usually recur at the subsequent periods, or at least they continue to dimish with each monthly return. In some females, however, they always appear with their original intensity, and have often remarked, in reference to these cases, that the acute pains and colics which prelude the flow of blood disappear, or even cease entirely, immediately after the first conjugal approaches, and especially after the first labor. In a still greater number the return of the menstrual period is throughout life indicated by some slight pains, a little uneasiness, or merely by a more or less marked disturbance of the general condition, the temper is less even, the woman becomes more excitable, more irascible.

Dr. Pouchet says, that the first sign of the menses is a peculiar odor imparted to the secretion of the sexual organs. I would suggest that perhaps this peculiar ammoniacal odor arises from the degeneration and disintegration of the membrane. Secondly, there is a change of color of the secretion, first white, then brownish blood corpuscles mixed with mucous globules and fragments of epithelium. Dr. Donne states that *the menstrual flow is acid*, containing *phosphoric* and lactic acids. I have also treated those discharges with tests, which have nearly always revealed the phosphoric nature of the fluid. Dr. Virchow insists that the detachment of the uterine mucous membrane is more complete than is generally supposed, and that in normal menstrual blood cells are often met with which, by their structure, reveal their origin in the uterine glands. Barnes says, that as the proportion of blood disks diminishes, that of the mucous elements increase. Also, that in young girls who have just arrived at puberty, the menstrual discharge is often preceded by a cerous, whitish, or brownish discharge. (This I consider is the first effort of nature to remove the membrane). This discharge may recur several times before the regular hemorrhage makes its appearance. The like phenomena are repeated at the disappearance of the menstrual discharge, *when the privilege of fecundity is lost*. (Consequently a new mucous membrane is not required.) The natural monthly shedding of the uterine mucous membrane, *instead of taking place in the usual way by disintegration*, so that the *elements escape gradually as detritus, mingled with the menstrual blood*, may be effected by a more rapid and violent process (as in dysmenorrhœa). The inner side of the membrane would exhibit the fine points or holes of the orifices of the utricular glands, and the outer side the ragged flocculent appearance which is commonly, but not always, seen in early abortion. It does not consist of the entire mucous membrane. The outer layer, with the blind extremities of the uterine glands, remains behind. If it be admitted, and observations in point are now so numerous and authentic that it can scarcely be disputed, that the mucous membrane, under simple ovarian menstrual excitement, does undergo a high degree of development not distinguishable from the decidua of early pregnacy, it must also be admitted as possible that *the mucous membrane* so developed *may be cast off*.

The late Dr. Simpson regarded the expulsion of the mucous membrane in dysmenorrhœa as *a product natural to the uterus as to function*, but at-

tributed the exfoliation to an exaggeration of a normal condition, or to an exalted degree of physiological action. Drs. Oldham and Tilt regard it as a result of ovarian disease. Drs. Raciborski, Lebert, Handfield Jones, and Simpson look upon it as a pure desquamation or exfoliation of the uterine mucous membrane, for which *no cause can be assigned.*

Dr. Williams says, if a section of the uterus be made directly after the appearance of the discharge, it will be seen that the mucous wall is pale and contains but little blood, while the mucous membrane, which, just before menstruation has commenced, has attained the thickness of almost half an inch, is almost black from engorgement of its vessels, and extravasation of blood into its substance. I speak of the inner surface of the uterus as its mucous membrane, in accordance with the views generally adopted, but I regard the uterus as not possessing such a mucous membrane, but as having a mucous membrane whose muscular fibre cells have undergone great development. The period during which the menstrual discharge flows is the time in which the muscular walls of the uterus contain least blood; from the cessation of one discharge to the onset of the next following, there is a continually increasing flow of blood through the uterus. This is due to the fact that the internal walls during the intermenstrual interval are rapidly proliferating, growing greatly in thickness, and *developing a new mucous membrane.* This rapid development requires an increase in the amount of blood flowing through the organ, but this increase should not be regarded as a congestion or an erection. Just before the menstrual discharge appears, the mucous membrane undergoes fatty degeneration, then the muscular wall contracts, this contraction drives the blood from the vessels of the muscular portion into those of the mucous membrane and broad ligaments; the result is that the muscular wall becomes pale, the mucous membrane greatly congested, and the vessels of the broad ligaments gorged with blood.

Dr. Tyler Smith (Manual of Obstetrics) says, "I have had opportunities of examining several uteri, taken from women who had died during the catamenial flow. *In each of these I found the mucous membrane of the body of the uterus either in a state of dissolution or entirely wanting.* In one case the mucous membrane was entirely gone. At the part of the cervix uteri the break in the mucous membrane was very apparent. In the cervical canal the mucous membrane was perfect, but at the os internum uteri it ceased as abruptly as though it had been dissected away with a knife above this point. I had the assistance of Dr. Handfield Jones in examining this uterus with the microscope, and we could find no traces of epithelium or of the utricular glands. The surface of the cavity of the body was exactly similar to that which may be seen after abortions, in which the decidua, or in other words, the developed mucous membrane had been discharged. A uterus was examined by Dr. Williams which presented very striking appearances. She had menstruated one day previous to death. Within the internal orifice was a marked excavation, which extended upwards into the cavity of the organ for nearly one inch, the lower margin was abrupt, and formed by the os internum uteri, the upper border was irregular and shreddy; the mucous membrane had been removed but not entirely. The manner of its removal was evident, for the upper margin of the excavation appeared to be melting away."

Engleman (*American Journal of Obstetrics,* May 1875.), speaking of the anatomy of the mucous membrane during the time of puberty and activity, says that it is characterized by the absence of even the slightest trace of submucous areolar tissue, and by its peculiar substratum of connective tissue abounding in cells. It appears in the virgin, non-menstruating womb,

after removal of the superjaceut transparent mucus, as a delicate soft pale grey or greyish red layer, which, owing to the absence of submucosa, is closely and inseparably attached to the muscularia. The uterine glands, unlike most others, possess no basement membrane, but appear simply as epithelial tubes composed of cylindrical ciliated cells, and are directly imbedded in the substratum of connective tissue. Neither the most careful preparation, nor the best lens, have enabled me to detect a membrana propria. In the virgin womb, the substratum in which the glands are imbedded consists almost exclusively of round and spindle shaped cells, of so delicate a character that in hardened specimens the faint outlines of the cell body are mostly invisible. Near the surface of the membrane the round cells are most abundant, while the spindle shaped cells predominate in the deeper layers, especially in proximity to glands and blood-vessels, where they assume a more fibrillar appearance, and accompany the course of those structures in parallel bundles. A reticulum of delicate fibres can be traced between the cells, those fibres, like the spindle-shaped cells, are also collected in more compact longitudinal bundles in the deeper layers, around glands and blood-vessels, while in the upper layers they divide irregularly, forming a loose mesh-work. During the menstrual period the membrane is swollen, of an almost pulpy consistency. Its surface is puffy, wavy, and in places reveals the delicately injected capillaries, after removal of its coating of whitish opaque mucus, occasionally tinged with blood. During the period of menstrual hemorrhage, and shortly after, until the restoration of the membrane to its normal condition, the cells of its tissue are more opaque and granular. We rarely find a completely normal, inactive uterine mucosa, which seems to indicate that the actual period of rest for that membrane is much shorter than is generally assumed. Although there is more or less marked accumulation of fat granules within the cells of the upper layers of the membrane, during and immediately after the hemorrhage, it cannot be said that the fatty degeneration is very intense or extensive. As far as it goes, this metamorphosis involves not only the cells of the interglandular tissue, but also the blood vessels and the glandular and surface epithelia. That these structural changes take place in the tissue coincident with the menstrual discharge is unquestionably proved, but the relation they bear to the hemorrhage has not yet been definitely ascertained. There are other physiological changes of the uterine mucosa in which a fatty degeneration of tissues takes place, as in the gravid womb at term, or at any time previous, when the ovum has perished, and the tissues are thus prepared for its separation."

And yet in the sentence preceding this he admits that them etamorphosis of fatty degeneration involves the blood vessels!

Cases that had died shortly after the cessation of the catamenia showed the still tumefied somewhat disintegrated (!) membrane. Of the menstrual abnormities of the uterine mucosa, none has attracted more attention than that known as dysmenorhœa membranacea, in which the normal physiological process is increased to morbid intensity. This condition found in women who have borne children, as well as virgins, in which large shreds of the membrane are expelled, illustrates more forcibly than the normal state how deeply penetrating the retrograde metamorphosis after menstruation may become. Instead of a mere gradual disintegration of the elements of the tumefied portion of the mucous membrane and their rapid absorption, this entire upper stratum is detached, "and expelled in toto as decidua menstrualis."

For the benefit of those interested in this subject, who will not believe unless they see, I will be happy to show them, microscopically, (specimens

taken from ladies suffering from slight uterine difficulty from the beginning to the end of the flow, and after it,) the abundant supply of the round cells which are given off at those periods to lay the foundation of the new membrane; also of the fatty corpuscles which are deposited in the membrane at the epoch, and of the ruptured capillary blood vessels, and pieces of nerve fibres intermixed with partially dissolved epithelial scales, corpuscles, etc. Physicians can get their own specimens for microscopic examination by getting their patients to supply the slides, say one each day during the flow. (Inter-menstrual discharges can also be examined microscopically, and their origin and nature satisfactorily determined; consequently a more correct diagnosis will be arrived at.) And if they will patiently and carefully examine the specimens they get from time to time, I feel satisfied they will find all those exudations I have just enumerated. This is an age of truth, as far as investigation goes, and not of falsehood; and, when a man can bring ocular demonstration to bear upon his views, those views ought to be accepted, notwithstanding what theorists may adduce to the contrary. Men are wont to state only those things which suit their convenience; but when the microscope is brought to bear upon those investigations, and used judiciously, carefully and repeatedly, it will, by its powers of penetration, reveal the truth, and at the same time ruthlessly destroy all the problematical ideas which have been built up by their authors. All investigators admire and honor the man, who, by his persevering industry and patient application to any science, unearths truths which have been previously clouded in mystery. Yet, if he makes bold statements, which, while they throw a doubt on the investigations of men eminent in ther professions, and which are untenable, he falls in the estimation of his compeers and fellow workers. I must confess I am rather astonished at the statements made by Engleman in his paper on the mucous membrane during menstruation, printed in the May number of the *New York American Jonrnal of Obstetrics*, as they are at variance with the views of so many physicians of high standing in the profession. He tries to make the medical world believe that the mucous membrane in the female child is the same as the membrane found in the girl at the dawn of womanhood, with the exception, that it has matured; and he also wants us to believe that that same membrane goes through all the acts of ovulation and menstruation without being renewed, and that it is there as a veteran at the close of menstruation, when it again atrophises and becomes as a little child's. He says, "I will not confine my remarks to the decidua, the mucous membrane of the womb during pregnancy, its period of highest vitality and greatest physiological importance, but will briefly discuss the structure of the uterine mucosa in its various changes from its first appearance in the fœtus, throughout its period of development in the child, and its long season of maturity and functional activity, to the time of involution and inactivity."

I leave my unprejudiced readers to be the judges, as his views are in print and can be read by those interested in the inquiry.

Mr. Gerrard, London, in an article on ergot, states that it contains large quantities of phosphates, and he believes that they are an item of the activity of that preparation.

I thought that perhaps the virtue of ergot consisted partly in the amount of phosphates it contained, in causing the energetic contraction of the muscular fibres of the uterus, by giving to the vesicles of the nervous ganglia an extra supply of phosphoric stimulus; and having at the time a few patients who were suffering from painful menstruation, I thought I would see whether phosphoric acid had any effect or not. Thereupon, I ordered

a fresh preparation of syrup of phosphate of iron, made according to the U. S. Dispensatory, and ordered a prescription as follows:

℞ Syr. ferri phosphatis, U. S. Dis., ℥vi.
Tinct. cinchonæ flav. U. S. Dis., ℥ii.

M From two teaspoonsful to a tablespoonful to be taken every four hours.

I began the treatment with two teaspoonfuls, one week previous to menstruation, and increased it to one tablespoonful during the flow, with marked effects. One or two told me that they had no pain at all during the period; others stated that they had suffered but little of the pain they usually experienced at those times.

THERAPEUTICS.

Practical questions on the use of raw meat in Therapeutics. A new and very advantageous mode of preparation. Tænia as a result of the administration of raw meat.

By J. V. LABORDE.

Translated from the Tribune Medicale for the Medical News.

The use of raw meat in alimentary hygiene and in therapeutics has become so general, and its undoubted advantages so highly esteemed, that in truth, it would be superfluous to reiterate them. We have reference to the meat in its natural state, and not to those numerous, too numerous preparations in which it is introduced and incorporated in the form of juice or extracts more or less concentrated into liquid tonics, generally alcoholic, fashioned so as to constitute a reparative beverage. We do not deny that some of those preparations may be useful, that some of them are recognized according to the rules of a well known pharmacopœia, but that none of them, not even the best, are as good as, or can take the place of, the natural meat, can not be rationally contested. It is not our intention to give here a complete history of the application of raw meat. Notwithstanding the almost unlimited extent of its applications, such a work would be according to our views premature, for we are not sufficiently versed as to the manner in which raw meat acts, that is in its mode of assimilation, in its digestibility as compared with meat that has been subjected to several degrees of cookery, and all things that depend for a just appreciation, on the results obtained by alimentary physics. Those ideas can be obtained only by experiments, and these we have but commenced. Until we possess them in full, we wish, placing ourselves on a practical footing, to give some unknown or neglected facts about the choice of the meat that is to be administered raw, and certain inconveniences attributed to its use, particularly that of producing tænia, and last, a very advantageous method of preparing the meat. It is hardly necessary to state that all kinds of meat will not do for this purpose. Dark meat, but principally beef, is the most appropriate. When beef is wanting, mutton can be substituted; but if one has the choice the preference must be given to the former. As it is intended that the meat be reduced to the greatest number of divisions possible, the selection of this or that piece is not a matter of indifference. Generally the parts covered with fat should be discarded. This will be easily understood, as it is not to be reduced by cooking, besides, it is important to remember that the fatty cellular tissue is the seat of the predilection of the cysticerci.

The most desirable piece is the rumpsteak, which comes from the true muscle of the thigh; there the fibres can be easily rasped longitudinally.

We think that rasping should be preferred to all other means of division. Chopping particularly robs the meat of the most part of its juice without realizing as great an amount of divisions as by rasping. Rasping is accomplished by means of a knife of average length, with a very sharp blade, the latter being in the highest degree essential for the success of the operation; indeed the blade ought to cut as well as a razor. The piece of meat operated on ought to be of a certain thickness, in order to offer resistance to the knife, and at the same time to have sufficient surface. The quadrangular or lozenge shape is the best, for the rasping should take place on all sides longitudinally, that is, following the natural course of the muscular fibres.

Let us add that the operation will be more easily and better accomplished, if the piece of meat held by one end rests on a resisting plane slightly inclined towards the rest of its extent. These are very minute details that those who already know them will find useless, but those who know not, and those who think they know, and who—but we continue. Let the one who does not ignore cast the stone at me. The meat is rasped, well rasped, and could not be put in a better state of division, and at the same time preserve all its elements. It now remains to present it to the patient. It remains especially to make him swallow it. This is no easy task to begin with. You well know my dear colleague of the expression of countenance, little encouraging that invariably follows your offer and prescription of raw meat. Doubtless the most disgusted and reluctant patient will, ordinarily, return to the prescription, especially if he is very ill and if he has great confidence; and there are some who not only triumph over their first repugnance but who come to prefer the use of raw to that of cooked meat, especially to that which is well done. But we must admit that these are exceptions. In general subterfuge must be resorted to. It is often found necessary to guild the pill. The divers means employed for this purpose are too well known to require repetition.

The most common and frequent way, is to reduce the previously rasped meat to pills or boluses, and roll them in powdered sugar, or in rasped bread-crumbs. But all persons can not swallow pills easily, especially when a great number of them are to be taken at a time, as in the actual case. Many persons prefer to wrestle against a greater or less repugnance, and to eat the meat raw in its natural state without even having been rasped. On the other hand, one sometimes sees (and it is an observation that we have been enabled to make) some persons whose stomachs prove completely rebellious against the digestion of raw meat in pills. There are such cases, and it is principally those that we wish to reach. There are cases where the use of raw meat is possible only when unknown to the patient. We must deceive him for his own good, and you may observe that those cases would sometimes be incurable without the intervention of raw meat, as we propose to show. Well then! It is in the form of, and in a measure under the mask of pottage, that one can, under like circumstances, offer the remedy to the patient, and make him in this wise the dupe of a salutary illusion. The whole secret lies in the confection of this pottage, and that secret is one of the simplest when it is understood.

Double Arm Presentation.—Dr. P. Q. Karkeek (*British Med. Journal*, Dec. 19, 1874,) reports a case in which, being called late, he found the "left arm, almost to the shoulder, in the vagina, and higher up, the right arm as far as the elbow." We do not recall a record of a similar presentation.

LINGERING LABOR FROM RIGIDITY OF THE SOFT STRUCTURES.

By C. L. Gregory, M. D., Montezuma, O.

I wish to call the attention of the profession to the use of two remedies in rigidity of the parturient canal, viz., lobelia seed and gelseminum. My experience with these two remedies has been quite flattering. It will not, however, do to use them in all cases indiscriminately. I have found them useful in two very opposite states. If the os is full, thick, hard, unyielding, giving a moist, cool, clammy sensation to the finger, and the same pertains to the vagina and perineum, with a limited secretion of mucus, use lobelia. The skin will also present a full, cool, clammy feeling, while the pulse will be slow, full, and oppressed. When I meet a lingering case of labor, where the bony pelvis is competent to pass the child, presenting the above conditions, I use the tr. lobelia seed* in from three to ten drop doses every one-half or one hour, till the tissues relax. Emesis is not desirable, and when threatened, lessen the dose. Given the above conditions, and I have yet to see the case of rigid parturient structures which will not yield to tr. lobelia seed.

When the os, vagina and perineum are thin, hard, dry, and contracted, giving to the finger a sensation of *dryness* and pungent *heat*, use fl. ext. gelseminum, green root. The woman will be restless and irritable; skin dry and hot; pulse sharp, vibrating, and accelerated. I give from ten to twenty drops at once, and follow it with five drop doses every one-half or one hour. It is not best to employ too large doses, or carry them to the extent of producing toxic symptoms; small doses frequently repeated are better than large ones at greater intervals. My experience is, that these two drugs never fail when the above mentioned symptoms are present.

REMARKABLE CASE OF IMPACTED COLON WITH SUPPRESSION OF URINE.

By W. H. Banwell, M. D., Vienna Cross Roads, Clarke County, Ohio.

Was called at 2 o'clock A. M. of October 2nd, 1874, to E. H., an unmarried lady, age 45 years. Has suffered all night with severe pain in right iliac region, and persistent vomiting. No headache, tongue large and clean, pulse 80. Upon inquiry, learned she had several imperfect defications the previous afternoon. Upon examinations found a hard lump in right iliac region and about the head of the colon, about the size of a hen's egg. Ordered cataplasm to be kept over the seat of trouble until the skin becomes red and tender, and then its place to be supplied by a hop poultice continually. Gave half grain opium every two hours. Called again in the evening, found condition of patien tabout the same, with perceptible enlargement of lump and increased tenderness; still vomits occasionally; continued opium alternated with brom. chloral.

Oct. 3d, 8 o'clock A. M. No vomiting since I left her last night. Patient complains that she can not urinate—has not voided urine since her sickness. Upon examination, found the abdomen much swollen, tympanitic, and very tender; no headache. Introduced the catheter but got no urine. Can it be possible that I have not entered the urethra with the

* The tinct. of the Dispensatory is worthless. I prepare a tr. by percolation, using eight drachms powdered seed to alcohol q. s. to make one pint of the tincture.

catheter. Introduced it again, and again, and finally by aid of vision, that I may be certain, beyond a doubt, that the catheter entered the bladder.

Patient suffering extremely. Looking upon the case with great solicitude, and at a loss to account for the entire absence of urine in the bladder, I requested counsel, and suggested, with great confidence, Dr. J. S. R. Hazzard, of Harmony, who was immediately sent for; who, upon arrival and examination of the case, requested that Dr. John H. Rogers, of Springfield, be called; meanwhile, pending his arrival, continued opium in increased doses.

Oct. 4th, 2 o'clock A. M., Dr. Rogers arrived. The abdomen of the patient at this stage presented the appearance of a pregnancy eight months advanced, tympanitic, and very tender, except just over the caput coli, which was dull upon percussion; pulse 120 and wiry. The catheter was again introduced, by Dr. Rogers, with similar result—no urine. Ordered turpentine stupe over abdomen. Three o'clock P. M., patient suffering extremely, pulse 130. Continue turpentine over abdomen and give one of the following powders every three hours during the night—

℞ Calomel, grs. xii.
Opii pulv. grs. vi.
M Div. in chart No. vi.

Oct. 5th, 9 A. M. The menses have made their appearance during the night; pulse 120; patient stupid, but can be easily aroused, and when awake is conscious. Continue turpentine, omit the powders until 3 P. M., at which time commence them again and continue through the night, with the addition of half a grain opium to each powder.

Oct. 6th, 8 A. M. Find my patient has rested quite comfortably during the night. Gave injections of warm water, which came away with no fecal matter; followed it by another more copious injection of warm soap-suds, and this by another, still larger, of soap-suds, salt, and castor oil, this came away with a small amount of fecal matter and a large lumbrocoid worm. Ordered another copious injection in three hours, and continue the opium powders during the night; pulse 110.

Oct. 7th, 10 A. M. Patient has had a large evacuation from the bowels, consisting largely of apple peelings, and has voided (if I can rely upon the statements of her mother, sister, and attendants) since midnight, up to this time, or in ten hours, the incredible quantity of two gallons of urine. She has slight headache, the first she has complained of; pulse 90, and soft. Nine P. M. Has had another large operation from the bowels and plenty of urine; pulse 90, compressible. Continue injection occasionally, also continue the turpentine over abdomen and opium through the night.

Oct. 8, 10 A. M. My patient has rested well through the night, and expresses herself much relieved. I can now manipulate without causing much pain; tympanitis disappearing; pulse 85, soft. Continue turpentine, and at 3 P. M. commence giving one of following powders and continue every three hours during the night:

℞ Pulv. opii, grs. vi.
Potass. chlor., grs. xii.
M Div. in chart No. vi.

Oct. 9th, 9 o'clock A. M. Found my patient sitting up in bed eating her breakfast; lump in right iliac region almost disappeared; no tympanitis; has natural discharges from bowels and bladder, and made a complete recovery in two weeks upon tonics.

Selections.

NEW METHOD OF PRESERVING TUMORS AND CERTAIN URINARY DEPOSITS DURING TRANSPORTATION.

By JOSEPH G. RICHARDSON, M. D., Lecturer of Morbid Anatomy in the University of Pennsylvania.

In the early days of medical microscopy, partly because all revelations of the science were looked upon by most practitioners with suspicion or positive distrust, partly, I presume, on account of real unskilfulness among its students, microcsopic examinations were rarely called for, and there was little need of devising plans for securing the portability of specimens. At present, however, when the value of the microscope, not merely as an aid, but even as the most reliable guide for diagnosis, prognosis, and treatment, in many forms of disease, is becoming almost universally recognized, some means of transporting urinary and other deposits, tumors, etc., over long distances, in the unaltered condition, has become a great desideratum. As a contribution towards this important object, I offer to the profession the subjoined method, originally contrived to meet the exigencies of a recent case in my own practice.

The clinical history in this particular instance, being accurately noted by the patient himself, a highly intelligent physician, gives such an exquisite picture of one form of the special renal malady in question, that I am confident most of my auditors will feel some interest in its relation, which is briefly as follows:—

About the 20th of August last, I received a letter from Dr. ——, residing in one of the trans-Mississippi States, informing me that he had forwarded to my address two specimens of deposit let fall from samples of his own urine, which he wished me to examine. In speaking of his condition, he remarked,—

"I am forty years of age, and for the last four years my health and strength have been steadily failing. From my normal weight of 165 pounds, I have declined gradually to 132, at the rate of about eight pounds per annum. My condition at first was attributed to malarial fever, but this cause has not involved the case for more than two years. My symptoms have, during this time, been as follows: great general debility, more or less dyspeptic symptoms, aggravation of rheumatic stiffness and soreness (not pain), from which I have suffered for years. A constant tendency to lose the erect position, and droop in the neck and shoulders. A gradual impairment of virility, amounting for the last six months almost to extinction. In fact, to sum up all in a word, general debility without apparent cause, covers the case. I have run the gamut, under the ablest advice, of tonics, stimulants, and nutritious diet, and have taken a sea-voyage of three months' duration, with no appreciable benefit. A few months ago I accidentally discovered—what had never before been suspected—the presence in my urine of albumen in large amount. Its presence is persistent, and its quantity on the increase. The deposit after being precipitated, and allowed twelve hours settle, just half fills the tube. I have never had any sign of dropsical effusion, but for the last year or more have suffered from periodical attacks of almost uncontrollable diarrhea, developing themselves with much regularity about every two months, and lasting from three days to as many weeks. The amount of urine secreted is

about thirty-two ounces for twenty-four hours, variable in color, but never turbid when fresh. I micturate a little oftener than when in health, always having to rise at least once during the night; urine much inclined to foam, sp. gr. normal (1021). Prof. ——, of Philadelphia, has pronounced my liver, spleen, and heart healthy, while my vital capacity as indicated by the spirometer is fifteen per cent. above par. * * * May I trespass upon your professional courtesy so far as to ask you to solve the problem, in which I am so much interested, by a microscopic examination? The presence of casts will of course demonstrate renal degeneration; but suppose no casts are found, what then? How in that case would my malady be termed? Certain it is I am suffering from something which, unarrested, must hurry me to a goal not dim or far distant. Please give me your views in reference to diagnosis, prognosis, and treatment. * * * Soliciting an early reply as the greatest favor that could be rendered to one in my present condition of suspense, it is the *suspense alone* that tries me, I subscribe myself, etc."

This letter which, I should mention, Dr. —— with brave unselfishness, and in the spirit of a true philanthropist, has most generously given me permission to make free use of in preparing any paper upon the subject was accompanied by a small box, enclosing the two samples of urinary deposit. Each specimen was contained in an ordinary two-drachm vial, stopped with a cork that previous to its insertion into the mouth of the bottle had been wrapped in a piece of this India rubber, and then, being pressed in to the level of the lip, had been firmly tied down with another small circle of sheet caoutchouc. The ingenious precautions thus employed to present leakage were entirely successful, but the long journey of some twelve hundred miles, occupying more than a week of the hot weather with which we were visited during the past summer, had given time enough for complete decomposition to occur, and, although one of the specimens was prepared with a small portion of carbolic acid solution, entire putrefaction had taken place in both before their arrival. The vial which had been merely sealed up gave forth when uncorked a strongly ammoniacal odor, and its deposit was composed only of amorphous granular matter. The other specimen, to which carbolic acid had been added, contained an abundant white coagulum, without any tube-casts, epithelial cells, or leucocytes. Numerous mycelial threads of fungous vegetation presented themselves, and were probably capable of developing in the solution to which carbolic acid has been added, because that acid was deprived of its parasiticidal properties when it combined with the albumen of the urine.

On mentally reviewing the preservative agents at our disposal, and rejecting, of course, alcoholic and arsenical fluids, on account of their power of coagulating albuminous substances, it occurred to me that solution of acetate of potash, whose admirable properties as a preservative menstruum for microscopic objects formed the subject of one of my communications to this section last year, would best serve our purpose; and I therefore wrote to my correspondent, informing him of the ill success of his first venture, and requesting him to prepare another specimen by filling a similar small vial with dry acetate of potash and then pouring in a fluid drachm of the sediment let fall from his morning urine after standing twelve hours in a cool place.

On the 12th of September I again received two samples, one of which had been mixed with the washings of a bottle that had formerly contained acetate of potash, and which comprised the doctor's entire stock of the salt; the other prepared with a small portion, about twenty drops of alcohol. Both of these were worthless for microscopic examination; and I

therefore procured a two-drachm vial of solid acetate of potash and forwarded it to my patient by return mail, requesting him as before to add to its contents a fluid drachm of his urinary deposit.

This last experiment in the preservation of a urinary sediment for transportation, the fifth of the series it completed, was entirely successful, the preparation reaching me about the first of October, not only in such a condition as to show well-defined hyaline, granular, and fatty epithelial casts of the uriniferous tubules in great abundance, but likewise embalming, so to speak, those pathognomonic signs of Bright's disease so perfectly that a drop of the fluid, which I have placed beneath one of the Academy's microscopes this evening, exhibits numerous tube-casts with admirable distinctness, even although more than six weeks have now elapsed since this identical sample which I here hold in my hand was prepared for examination, upward of twelve hundred miles away.

During the past few years I have repeatedly felt the need of some method for preserving specimens of tumors and other pathological formations for microscopic investigation, which might prevent the alterations in the cellular elements which are so apt to occur with the media now in use, and also avoid the difficulty of sending fluids by mail, or the delay and expense attendant upon carriage by express. Since employing the plan described above, for insuring the portability of specimens of tube-casts, in spite of their exposure to either very high or very low climatic temperatures, I have made a few observations upon the effects of the acetate of potash solution upon morbid growths, and, as a result of my researches, recommend the following method:

Place a small fragment of any tumor or pathological structure, say a quarter to half an inch square and one-tenth of an inch thick, in a couple of drachms of saturated solution of acetate of potash, and allow it to fully imbibe the fluid by soaking therein for forty-eight hours. The solution referred to is best made by simply pouring half an ounce of rain-water upon one ounce of dry granular acetate of potash, in a clean bottle. When the tissue is thus fully saturated with this saline liquid, remove it by means of a pair of forceps, without much pressure, and insert it in a short piece of India rubber tubing, or wrap it up carefully in a number of folds of thin sheet rubber or of oiled silk, tying the whole firmly at the ends with strong thread. When thus prepared, specimens can be enclosed with a letter in an ordinary envelope, and sent long distances, doubtless thousands of miles, by mail without danger, on the one hand, of decomposition, because of the preservative power of the potassic acetate, or, on the other, of desiccation, on account of its exceedingly deliquescent nature.

One very important advantage which this plan has over those in which alcohol or glycerine is employed as a preservative agent, is that the menstruum has little or no effect upon the oil-globules contained in cells. Hence by its aid we are enabled to recognize fatty degeneration in the cellular elements of a tumor, and easily to detect the same metamorphosis in the kidneys from minute oil drops in the epithelium attached to the tube-casts of Bright's disease, under circumstances where specimens preserved in glycerine or alcohol would afford a doubtful or wholly negative result.

Urinary deposits composed of oxalate of lime or of triple phosphate are not, according to my experience, readily preserved in solution of acetate of potash, possibly on account of chemical decompositions which occur. When these crystalline bodies are met with, as is usually the case, in non-albuminous urine, they could probably be best retained in an unaltered state by adding from twenty to thirty per cent. of solution of carbolic acid to the renal secretion in which they are found.

THE OPHTHALMOSCOPE IN CEREBRAL DISEASES.

When, in the mercy of a Court and by request of counsel, a jury trial is ordered after the conviction of a prisoner of murder, to investigate the sanity or insanity of the convicted before final award of the death penalty, and when, accordingly, five supposed medical experts are called to give testimony, it would naturally be supposed that the medical experts would exhibit a respectful deference, whether agreeing or disagreeing, for the statements under oath of their colleagues in the case. But this was not so in the recent trial reported phonographically in the May number of the *Lancet*. When Dr. Herz sustained his opinion of the insanity of Ah Lee Chow, by the evidence or the manifestations obtained by the ophthalmoscope as a part of the testimony upon which he had arrived at his conclusion, the Commissioner in Lunacy, Dr. Stillman, attempted to rebut, in a very contumelious manner, by a general disdain of the application of the ophthalmoscope, or any other scope, to the study of diseases of the brain, confiding to his own enlightened eye and judgment alone. However pre-eminently expert in lunacy may be the Commissioner, his testimony in this case demonstrates that he can not afford to waste his powder.

To the question, "Have you ever used the ophthalmoscope in your examinations?" he answers, "No, sir; nor the stethoscope, nor probangs, nor anything of that sort."

Q. Do you believe that the retina indicates the condition of the brain? A. No, sir; it may in certain cases, but not invariably.

Q. You have never used the ophthalmoscope? A. No, sir; not for that purpose.

He further answers to a question on the value of the instrument in cerebral diseases? "When I am satisfied that by the ophthalmoscope or stethoscope, or any other instrument, we can determine the mental condition of a person, I shall think it invaluable as a means of diagnosis in insanity."

Q. Then the ophthalmoscope may be of great use in determining cases of insanity? A. I don't believe it can be.

Now, it is just this that others do believe and *ten years' experience has proved.* We hence present the following quotation from the June number of the *Canada Medical and Surgical Journal*, Montreal:

"Mr. Bouchet has recently given, in the *Hospital des Enfants Malades*, the results of his labors with the ophthalmoscope as a means of investigating the condition of the brain. His lectures, of which an abstract appears in *La France Medicale*, opened with an exposition of the anatomical and physiological relations of the eye with the brain and spinal cord, in order to show the influence of cerebro-spinal lesions upon the optic nerve, the retina, and the choroid. He lays down four laws as to the formation of intra-ocular lesions caused by diseases of the brain, the cord, and the meninges:

"1. Whenever the circulation is impeded in the cranium or in the sinuses or meningeal vessels, by compression of the ventricles distended by serum or other cause, an arrest of the venous circulation takes place, which produces in the eye swelling, hyperæmia, and œdema of the papilla, varicosities of the veins, and sometimes hemorrhages.

"2. When a tumor with encephalitis, or when partial encephalitis exists, it causes an inflammation which brings about sclerosis of the optic nerve and exudations which imprison the papilla, and at length cause its atrophy.

"3. If the cord is affected either by anterior or posterior sclerosis it acts upon the eye through the great sympathetic, giving rise to hyperæmia of the papilla ending in atrophy. This occurs in locomotor ataxy.

"4. In every diathesis, and in cases of poisoning when the whole body suffers, the eye suffers with it, and we meet with certain forms of neuritis or choroïditis.

M. Bouchet exhibited more than one hundred figures drawn during the twelve months over which his researches have extended, and then demonstrated the various ocular lesions produced by diseases of the nervous centres. He showed cases of spinal neuritis, and those which result from locomotor ataxy; and then of neuritis and neuroretinitis, produced by meningitis (tubercular, typhoid, or rheumatic); by cerebral hæmorrhage and softening; by hydrocephalus and thrombosis of the sinuses; by chronic encephalitis, and by the same condition resulting from heart disease; by tumors of the brain; by tuberculosis; by syphilis; by albuminuria; by leucæmia; and, finally, neuritis resulting from paralysis of the sixth pair consequent upon certain forms of epilepsy, hallucinations, concussion of the brain, etc."

The united voice of the profession concurs in aiding the efforts made in the nineteeth century in the hygienic reforms as a preventive of disease. Conservative surgery is the pride of modern science, but the inconsistencies of medical jurisprudence in insanity, its obscurity, its mystery, the lethargy in reform, the wide hiatus between statute law and the laws of nature in the relations of psychology, with those of physiology and physical disease, make but slow impression in the practice of law. The petrified soil of ancient precedent and prejudice is hard to plow—the tardy harvest long to await. It was precisely in this view that the case of Ah Lee Chow, presenting so many points of vital interest, was seized upon with avidity without regard to cost or space, to illustrate one of the most difficult and embarrassing problems in forensic medicine.

We can not say whether or not the present case will pass into oblivion; but it is worthy of the careful study of jurists who seek reform and truth in the matter of insanity. If the record of all the executions for murder during the past two centuries could be truthfully searched, and appealed to an infallible decision, the ratio of insane victims who have succumbed as sane criminals, would astonish the mind; and, *vice versa*, the ratio of genuine criminals who have escaped under the plea of insanity, would create no less surprise. Why, then, should be scouted every available means, every accessible force and instrument by which the dark recesses of the brain may be penetrated—the depths of the human intellect be sounded? Why may not the condition of a part (the retina), subserve to illustrate, or sample, the condition of the whole, the brain?—*Editor of Western Lancet.*

SMALL-POX AND VACCINATION.

Among the proceedings of the Convention "American Health Association," held in November last, Dr. Toner read a paper on the subject above referred to, after which Dr. Moreau Morris, of this city, made the following remarks, which are well worth preserving, as they proceed from a high authority on all questions relating to smallpox and vaccination:

Dr. Moreau Morris said that several points had occurred to him while Dr. Toner was reading his paper, which he had jotted down and would read. First, in regard to the frequent failures of vaccination. He had had a great deal of experience in the operation, and believed the cause of failure usually to lie in the imperfection of the virus, or in an improper method of operating. It is not unusual for a practicioner who wishes to vaccinate

a patient, to ask his nearest neighbor for some virus. An old crust is produced, or a quill or two which have been kept for an indefinite period, and this is used.

Having had charge of the public vaccination during the last smallpox epidemic in New York, Dr. Morris was surprised at the amount of ignorance and carelessness manifested by many who performed the operation. Some would take an ordinary lancet and make several scarifications from one-eighth to one-ninth of an inch deep, causing considerable bleeding. Then a quill would be rubbed over the surface, and that would be called "vaccination." Of course, under these circumstances, it would rarely "take." Others would scarify the surface superficially—an equally useless proceeding. To show the perfectly protective character of proper vaccination, he might mention his own experience in New York, where, in two hundred thousand cases of vaccination, of which a record was kept, no cases of smallpox occurred subsequently.

As to the use of humanized or bovine lymph, he was satisfied that the former was equally efficacious with the latter. The lymph, however, must be fresh, and kept at a proper temperature to avoid decomposition.

As regards the number of points at which the virus should be introduced, Dr. Morris agreed with Dr. Toner in thinking that it should be done in several distinct localities for security, though a single good inoculation is sufficient. One point Dr. Toner had not brought out—the necessity that the system should be *saturated* with the virus.

Dr. Morris as a rule, repeated the vaccination on the eighth day; often, when the first vaccination has seemed successful, the revaccination has run its course. He mentioned in this connection the case of a person who was peculiarly exposed, and who was vaccinated successfully three successive times. Among the causes of the non-success of vaccination, he had found the use of dirty lancets and imperfect inspection by the physician, who too often is satisfied with the statement of the patient or friends that it "took."

Constant inspection on the part of the physician is alone satisfactory. As to the material used, good crusts would answer, but he would prefer lymph. In conclusion, Dr. Morris said that a course on vaccination should be a part of the education of every medical student. Vaccination is an art and cannot be picked up.—*Druggists' Circular.*

THE MARRIAGE OF COUSINS.

One of the "undetermined questions" on which much light might be thrown by those who have an opportunity of ascertaining with accuracy and completeness the circumstances of family life, is the effect of marriages of consanguinity. In this country the problem is almost limited to the effect of the marriage of cousins. The question is of great importance, for it comes up at some time or other in almost every family, and from the members of our profession an authoritative opinion is constantly expected.

A strong feeling against such unions has grown up among many of the more thoughtful and better informed members of the community. The objection is in part probably an instinctive one, but is chiefly founded on the occasional known consequences of such marriages. Instances in which the offspring have exhibited in alarming frequency defects of form or constitution have probably come within the personal knowledge of most persons, and striking examples which have from time to time been recorded are to be found in most physiological text-books. Deaf-mutism is one of the commonest defects met with under the circumstances; and the chaplain

to the Association for the Deaf and Dumb, has recently enumerated in a letter to a contemporary, several sad instances which have come under his notice. In different families two, three, four, and in one case eight out of nine children were deaf and dumb, the parents being cousins. Of the frequent disastrous results of such unions there can be no question. Mantegazza found that out of 500 marriages between blood relations in only 102 the offspring exhibited no morbid tendency.

It is obvious, however, that not every morbid condition occurring in children of related parents can justly be ascribed to consanguinity. Some statistics do not show at all conclusively the influence they are supposed to prove. Mantegazza, for instance, found that in 15 marriages between uncle and niece, or aunt, or nephew, 33 per cent. of the offspring exhibited defects in constitution or development; in 107 marriages between first cousins, 28 per cent. of the children were affected; in 38 marriages between second cousins, 94 per cent. of children, and in 68 between third and fourth cousins, 41 per cent. of the children suffered. The affection of the children in the two latter cases was obviously in great measure irrespective of the relationship between parents, and probably is of no significance for or against marriage of consanguinity. Instances are also not unfrequent in which the offspring of such a marriage exhibit no defect in development or in constitution—are in every respect strong and healthy; or if weakness does occur, it is not with greater frequency or in greater degree than is common in the children of those who are not cousins. Cases are indeed on record, especially in certain colonies, etc., in which repeated intermarriage, continued even for centuries, has led to no apparent deterioration of physical condition.

The problem is rendered complex by the circumstance that, in a large number of instances, the marriage of relations brings into play other influences than those implied in the mere fact of consanguinity. It is well known that a morbid tendency existing in each parent is transmitted with great certainty, and usually in intensified degree, to the offspring. Relations, of course, much more frequently than strangers, possess the same constitutional condition. As has been said, "consanguinity raises hereditary to its highest power." Moreover, in some of the instances of intermarriage, the relations have lived in contiguity, have been exposed to the same endemic influences, which have thus been intensified in their offspring, either in actual morbid states, or in liability to disease. It is believed by some that all instances of defects in the offspring of such unions may be thus explained; that marriages of consanguinity do not in themselves entail any evil. Of late Mattei, Bertillon, and others have strongly urged this view. The latter even advocates the beneficial influence of such unions, augmenting the healthiness of families free from taint, while it brings out to the light of day concealed impurities of blood. But such reasoning involves a grave and dangerous misrepresentation. Intermarriage can only conduce to health in families free from taint, by keeping out extraneous sources of impurity, while the least proclivity to disease is increased incalculably. Very few families in a community such as ours are so free from lurking mischief as to be able to venture on such a course. On the other hand, the union of a sound and unsound individual not only may conceal but actually diminish the transmitted taint.

The question can only be determined by the careful record of a large number of cases by those who can trace out family connexions and are fully acquainted with family taints. Instances on the one hand, of the marriage of cousins, and its results; and, on the other, of the occurrence, under different circumstances, of such defective development of constitution

or physique as has been attributed to inter-marriage. Until this is done, and data, negative as well as positive, collected in large number, the question must remain undecided. The evidence afforded by isolated instances such as we have mentioned cannot be regarded as conclusive. But the peculiar character of many of the cases renders it difficult to understand that they can be entirely due to the influence of transmitted and intensified tendencies to disease. The form which they assume is, with curious frequency, that of defective development of the nervous system and its appendages, showing itself especially as deaf mutism. This clearly, in some cases, results from the transmission of a tendency to disease of the nervous system, which shows itself in other members of the family as insanity or epilepsy. But if there is, as there appears to be, a considerable number of cases in which the deaf-mutism in offspring results from the marriage of cousins in which no such family proclivity to affections of the nervous system can be traced, even in the slightest degree, the probability that such defect is the direct result in some way, of the consanguinity of the parents is very strong. It is difficult to understand how any other morbid tendency on the part of the parents would result in such a condition, either by causing defective development in that special direction, or by the mechanism of intra- uturine disease.

Whatever be the conclusion, it can, however, very little affect the practical question. Whether intermarriage be capable of generating defect in the offspring of the previously healthy, or merely of intensifying morbid tendencies already existing, there can be no doubt that the health of the community has nothing to gain but very much of the lose by the practice, and that it should be, as far as possible discountenenced. Were it not for the effect of union with healthy persons, the morbid tendencies, which so many possess, would receive, as they do when the rule is departed from, terrible augmentation.—*The Lancnt.*

ON ESERINE AS A REMEDY FOR CHOREA.

M. Bouchut (*Bulletin General de Therapeutique*, April 15, 1875) gives the results of 437 experiments performed with the active principle of the Calabar bean. The eserine was employed either pure or in the form of sulphate. It was sometimes administrated by the mouth, in solution or in pill, sometimes hypodermically; the dose in each case varying from two to five milligrammes (1-35th to 1-14th of a grain). The subjects of experiment were children from seven to twelve years of age suffering from chorea in all its stages aud varieties.

The physiological effects produced by a single dose of five milligrammes of eserine injected under the skin were the following: pallor, nausea, salivation, intense *malaise*, occasionally vomiting. No colic or diarrhea occurred. The pupils often remained unaffected; they were sometimes dilated, sometimes contracted, but always active. Abundant prespiration was frequently noticed. The retinal veins were contracted and the fundus of the eye pale. The most serious and disagreeable symptom which occurred was an enfeeblement or even paralysis of the diaphragm. These symptoms lasted from one to three hours after the injection; no unpleasant sequelæ were observed.

The phenomena produced by smaller doses, subcutaneously administered, or by the same dose introduced into the stomach, were similar in kind, but much less intense. The most suitable dose for hypodermic use is two and

a half milligrammes (1-28 of a grain); this never causes any very disagreeable effects, and may be repeated twice or three times a day.

Next, as regards the remedial efficacy of the drug, the choreic movements are invariably arrested so long as the physiological effect of the injection lasts; when this has passed off, they return, but usually in a less severe form. Daily injections cure the disease in an average period of ten days. —*London Medical Record*, May 12, 1875.

STRAIN AND OVER-ACTION OF THE HEART.

Dr. J. M. Da Costa, Professor of the Practice of Medicine in Jefferson Medical College, Philadelphia, having been invited by the trustees of the Toner Lectures to deliver an address, selected for his subject that of strain and over-action of the heart. The number of cases of heart disease unconnected with any history of rheumatism, gout, or renal mischief, that are met with in practice, imparts an interest to the subject. Some researches into the frequency and causes of heart disease in the United States army, conducted under the auspices of the Surgeon-general's office, formed the starting point of several of the conclusions which the lecturer advances. Discarding the ordinary and well known sources of cardiac disease, Dr. Da Costa addresses himself to the consideration of a cause but little appreciated and to some scarcely known—the production of disease of the heart by strain and over-action. While there is a close connection, at times nearly an identity, between the two, for the purpose of convenience the lecturer limits the idea of strain, unless the contrary is stated, to an acute strain—an injury by sudden, violent effort; and regards over-action, over-exertion, or over-work—for these terms may be employed almost synonymously—as a persistent excitement and derangement produced by less rapidly acting causes. Passing by those cases in which a rupture of the fatty or otherwise diseased muscular walls of the heart follows a strain, he adverts to those breaks and tears in the valvular apparatus and great vessels which clearly seem to be the result of a sudden disturbance. A person, for instance, is seized, after unusual exertion, with pain in the heart, and a distinct murmur is recognized, and followed sooner or later by the phenomena of valvular disease, varying, of course, as this or that valve has been the one damaged. The aortic and mitral valves suffer most frequently from injury of this kind; but the same thing may happen to the tricuspid. A segment of the mitral valve has often been observed torn from its attachment. The patient will sometimes speak very positively about his impression of something having given way in the chest, and he shortly after feels severe pain. These attacks of pain, paroxysmal in character, attended with palpitation, embarrassed breathing, and other manifestations of cardiac distress, are of course apt to recur and increase in severity. Most practitioners will be able to recall to their recollection occasional cases with a medical history of this kind; and two or three examples within our own experience may be taken as samples. The first is that of a previously healthy and robust man under forty years of age, who affected athletic exercises. One day, while undergoing violent exertion, he felt a sudden uneasiness in the chest, which caused him to desist. Shortly afterward, while quietly smoking a pipe, he gave a violent sneeze, and became then and there sensible of a peculiar sensation and sound attending the action of his heart. The sound was sufficiently loud to be audible to his companions; and, on subsequent examination, a loud humming murmur,

generated apparently at the aortic opening, could be heard there and over the course of all the larger arteries. He passed from observation, but we ascertained that he died of symptoms connected with this cardiac mischief a few years afterward. In the second case, a perfectly healthy, but not very muscular man, some thirty years of age, formed part of a boat's crew on an occasion of considerable excitement. Stimulated by the exertions, he put forth every effort, and continued rowing until, in his words, he was "dead beat" and was removed from the boat in a fainting condition. He suffered much pain in the chest at the time, and expectorated a small quantity of blood. Shortly afterward he was admitted into the hospital, and ultimately died with the physical signs of extensive cardiac disease. A post-mortem examination revealed a small aneurism of the aorta, with an opening of communication between it and the pulmonary artery. The third case occurred in the person of an officer of fine physique, who was energetic and skillful in most athletic exercises. He traced the origin of a loud valvular murmur, followed by dilatation and hypertrophy of the heart, to his habits in this respect. Embolism of the main artery of one lower extremity formed a subsequent complication in this case, but, owing to the establishment of a free collateral circulation, he perfectly regained the use of his limb.

Dr. Da Costa briefly adverts to a question that has been much debated, and happens to possess an annual interest with us—viz., the influence of rowing in producing heart disease. His experience amounts to this: that if there is any tendency to irritable heart or to any cardiac affection it is aggravated by rowing; but that this exercise is otherwise beneficial, provided it be not too steadily followed.

We are persuaded that lesions of the coats of the large vessels in soldiers, which sooner or later lead to aneurism, are, in reality, due to an acute process of an inflammatory nature, and often unconnected with atheroma, and that this last condition is frequently itself the product of an allied but more chronic process of the same kind, as pointed out by Dr. Moxon and Dr. Lawson.

In the class of cases just alluded to, the result was attributable to muscular strain or violent muscular exertion. But the same result, Dr. Da Costa is certain, may happen from extraordinary mental emotion or shock; and he gives some striking instances in proof of the correctness of his conviction, one occurring in the troublesome times of the late civil war. In some of these cases no structural imperfection likely to cause the break is discoverable; but in confirmation of the idea that there may be a slight alteration—under ordinary circumstances innocuous, but becoming serious under strain—Dr. Da Costa refers to his having occasionally discovered in post-mortem examinations very slight fissures in the valves, just sufficient to have produced a rent under any strain, or severe and sudden abnormal working of the ogan. Dr. Da Costa next proceeds to the consideration of those cases of functional excitement of the heart from continued over-action and over-work. There is, first, the "irritable heart," so well known to military surgeons—a condition often engendered in recruits and young soldiers by the combined action of several factors present in a soldier's life. The same malady may, however, be encountered in civil life—among the causes of which the use, or rather the abuse, of tobacco, alcohol, tea, etc., may be reckoned; but hard exercise—such as mountain climbing—great mental emotion, malaria, or the occurrence of certain specific febrile diseases, typhoid and typhus, and occasionally yellow fever—in all of which there may ensue a granular degeneration of the muscular fibres—may lead to the same result.

The lecturer conceives, and no doubt correctly, that the origin of these affections is connected with a perverted innervation; and he proceeds to expound the clinical facts by the light of the latest physiological researches into the opposing influence exerted by the pneumogastric and sympathetic nerves on the heart's action. From the perverted innervation, moreover, comes altered nutrition; and thus heart disease may grow out of heart disorder.

Speaking of the effects of occupation, Dr. Da Costa refers to the influence of excessive expiratory efforts in producing affections of the heart or its great vessels; and he illustrates this by a table showing the prevalence of cardiac disorders among glass blowers. He thinks that dancing, when excessively indulged in, frequently leads to great irritability of the heart, as indicated by the occurrence of functional disturbance of the organ among girls at the end of a winter season. It may be shortly stated that, as regards the effect on the circulation, all active, even violent, exercise is only injurious when too steadily persevered in; and that it is the intermitting which protects, and explains the reason why those exercises and pastimes are less productive of cardiac affection than the hurrying and impeding of the circulation, occasioned less palpably, but more constantly by certain occupations.—*The Lancet.*

CHLOROFORM AND NITRATE OF AMYL.

Dr. F. A. Burrall, of New York, recalls (*Med. Record,* May 12, 1875) the fact that in the *Medical Times and Gazette* of December 12, 1874, is an account of some experiments by Dr. Schuller, made for the purpose of determining the action of certain drugs upon the vessels of the pia mater. It is stated that "after the inhalation of chloroform the veins and arteries of the pia mater at first contract, but they very soon become relaxed, and considerable venous congestion follows. Dr. Schuller has made the interesting observation that nitrate of amyl not only quickly removes the effects of chloroform on the vessels of the pia mater, but in cases of advanced narcotism from the latter drug. It rapidly relieves the dyspnœa and labored respiration, and renews the strength of the pulse, while at the same time it restores the animal's reflex excitability in an astonishingly short space of time." The author of the communication to the *Medical Times and Gazette* then adds: "We are not aware whether nitrate of amyl has been tried in cases of danger from chloroform in man, but the above observation is worth remembering by those engaged in its administration, and it may possibly be the means of saving valuable lives."

Those who have struggled with sturdy patients through the maudlin inebriety which usually precedes the anæsthesia produced by ether, would fain prefer the brief excitement and calm slumber which are induced by chloroform. But chloroform has fallen into disfavor since so many deaths have attended its use. Children and parturient women have been found to bear it exceptionally well, and it is regarded as a comparatively safe anæsthetic for the field. But the mortality among others has been, as compared with similar agents, very large. Hence the inconvenience incident to the employment of ether do not counterbalance the risks of chloroform, and ether is preferred for general use. Perhaps Dr. Schuller's experience will enlarge the field for the safe administration of chloroform.

Whether nitrate of amyl has been used to avert the dangers from chloroform in man I do not know, but it has long seemed to me, from *a priori*

reasoning, to be indicated under such circumstances, and in a short paper on the nitrate of amyl which I sent to the New York *Medical Gazette* of June 11, 1870, I recommended its use in the following words: "It would seem worthy of a trial in the threatened syncope from chloroform; since the inhalation of but a few drops is followed by marked acceleration of the heart and flushing of the face." In my own practice I have never had an opportunity of making the trial, but with this stronger light of recent investigations should consider it more than ever a duty to do so.

Evidently with these experiments of Dr. Schuller before us, science now demands that whenever chloroform is administered, the nitrate of amyl should be at hand as one of the agents to be employed in case of impending danger.

SOLUBILITY OF BILIARY CALCULI WITHIN THE GALL BLADDER.

By Ralph S. Goodwin, M. D., of Thomaston, Conn.

In number 894 of the *Medical and Surgical Reporter*, published April 18th, 1874, appeared a communication from Dr. E. Burd, of Iowa, in which the writer expresses his belief that certain substances, such as Durande's mixture, which consists of sulphuric ether and turpentine, (three parts of the former to two of the latter,) as well as chloroform and ether used separately, when taken into the stomach, are capable of exerting a solvent action on biliary concretions already formed in the gall bladder.

In support of this theory the Doctor relates the case of a patient who was evidently much benefitted by taking Durande's mixture, claiming for it a solvent action on the concretion already formed, or in the process of formation, in the gall bladder.

Not long since, in a paragraph coming from a London medical periodical and going the rounds of the medical press in this country, it was claimed that a clergyman of England, who had suffered from gall-stone colic very many years, was finally permanently cured by the solvent action of chloroform taken persistently, in five-drop doses, *ter die*.

Now these statements show that there is a fascination about this solvent theory of the action of medicines on gall stones, notwithstanding its absurdity, which it is difficult for the medical mind to resist.

I desire to say a few word in refutation of this theory, since I have had a little experience in cases of this kind.

A few years ago I had the fortune to encounter a very obstinate case of cholelithiasis, in which, contrary to the general rule, I had succeeded in catching upon a sieve, at different times, a number of the concrements, establishing the diagnosis. Not being at that time very certain as to the impossibility of the solution of gall stones by medicines, and having failed by other measures to control the cholelithic diathesis, I determined to give the solvent medicines a trial.

I gave my patient, who was a woman of sixty years, fifteen drops of chloroform three times a day, and succeeded in inducing her to continue its use for three months, notwithstanding that during that time an attack of gall-stone colic occurred nearly every week. I then tried the succinate of iron, as recommended by Dr. T. H. Buckler, with the same object in view, but without satisfactory results; and finally I persuaded her to try the nauseating mixture of Durande, according to rule, for several months. This also was accompanied by no good results, except a larger collection of gall stones with which to experiment; and so I became extremely skep-

tical as to the solvent power of medicines on biliary calculi. I then made a few simple experiments with the gall stones which I had saved. I threw one of them into an ounce phial filled with chloroform, and though the specimen only weighed five grains, it required thirty-six hours to dissolve it completely.

Chloroform will dissolve a biliary calculus of any chemical variety, but it does not follow that it can be readily introduced into the blood in sufficient quantity to effect a solution of a concretion immersed in bile in the bottom of the gall bladder, or lodged in a gall duct.

Another experiment was this: I procured, on one occasion, a human gall bladder half full of bile, having carried it away from an autopsy. I weighed one of my specimens of gall stones, and dropped it into the bile contained in the bladder. I then dropped into the same thirty minims of pure chloroform, tied up the bladder, agitated it, and hung it in a secluded place. At the end of ten days, I took out the specimen and weighed it. It had gained somewhat, rather than lost in weight, owing to its hygroscopic qualities. I then replaced it and added one drachm of pure chloroform. In fourteen days I took it out and weighed it again, and found it had not lost weight The chloroform had evaporated in both cases, leaving no odor behind. There was no appearance of erosions on the gall stone. I had intended to try Durande's mixture in the same way, but was prevented by evidences of putrefaction in the bile.

Now, I reasoned thus: If a teaspoonful of chloroform, which is the greatest dose possible for any person to take habitually into the stomach, would not dissolve a gall stone of very moderate dimensions when dropped directly into a gall bladder containing bile, outside of the human body, it would certainly be a wide stretch of fancy to expect it to do so when diluted through eighteen or twenty pounds of blood, and distributed all over the body, with a certainty that not more than one hundreth part would ever reach the vicinity of the gall bladder. I do not claim, of course, that this experiment was entirely conclusive, since it was conducted outside of the body, and, therefore, the conditions were not the same as in the living body. But the conditions would be, theoretically, more favorable outside the body, as in the experiment, than during life. For we are not certain that the chloroform and ether undergo some sort of decomposition in the process of digestion, so that they do not appear in their full integrity in the presence of the gall stone. It cannot be claimed that these substances are cumulative in the system, so that by repeated and prolonged exhibition they may finally exist in sufficient quantities to produce a solvent action They are evanescent and volatile, and speedily find their way out of the blood by the kidneys, lungs, etc.

The same argument will hold in regard to Durande's remedy. In the year 1806, Thenard read before the Academy of Science, at Paris, a paper, in which he showed the impossibility of the solution of gall stones by Durande's method. I will quote from "Thudichum" (page 81) what he says on this subject:

"At a temperature of 32° R., the ether in the mixture must separate from the oil of turpentine, and evaporate. The mixture, moreover, could only be taken in moderate doses, and even when taken in large doses, no part of it could get into the gall bladder, or, at least, so small a quantity that its solvent power could not be taken into account."

After expressing his disbelief in the solvent action of medicines on gall stones, Mr. Thudichum himself says (page 86):

"I have used the mixture of Durande in some instances, and have always had some difficulty to prevent the patients from continuing it for an undue

length of time. For I had found what I remember to have seen recorded as the result of the experience of others, that when the mixture is used improperly or too long, or even according to rule, it is apt to cause inflammation. In one of my cases, where it was continued for years, the chronic inflammation of the liver and the neighborhood of the gall bladder appeared to have been produced, or at least greatly aggravated, by this mixture, or by the turpentine which it contains."

Von Niemeyer says (volume I. page 705), "the fact that ether and oil of turpentine dissolve biliary calculi placed in them, does not justify the hope that they will dissolve any concrements in the gall bladder, if they be introduced into the stomach. Hence, if Durande's remedy has a favorable influence on the conditions induced by gall stones, as we must suppose it has, from the recommendations of numerous and good observers, this can only take place in some way which is entirely unknown to us."

Prof. A. Flint, in his work on practice of medicine (page 438), says: It seems, however, absurd to suppose that these or other remedies can be introduced into the system, so as to enter into the composition of the bile largely enough to dissolve the cholesterin, of which mainly biliary calculi are composed. And it is evident that clinical proof of the success of remedies given for this end cannot be obtained, since, in general, the existence of calculi within the gall bladder is not ascertained prior to their passage into the intestines."

Now, in the face of such authority and cogent reasoning as this, is it proper that we should still stick to the old theory of the solubility of gall stones by medicine? And should we, in proof thereof, adduce cases from our practice which happened to get well in spite of the "dissolving treatment?"—*Medical and Surgical Reporter.*

Microscopy.

REMARKS ON SILICA FILMS, AND THE STRUCTURE OF DIATOMS.

By G. W. Morehouse, Esq., Wayland, N. Y.

The writer has prepared some films of silica, after the process described by Mr. H. J. Slack (Monthly Microscopical Journal, June 1, 1874, page 238). To facilitate examination, some of the films were carefully washed and then mounted in balsam; others were burned out upon the glass cover before mounting. The latter method is much the best and quickest. The opinion of so distinguished an observer as Mr. Slack is entitled to great weight, and the writer is happy to be able to concur with him in the opinion that the cellular character of some of the films is due to bubbles of gas; and that, under the conditions to which these experiments are necessarily confined, the deposition of the silica is generally in the form of spherules, No one pretends that these conditions approximate to those that obtain in the growth of the protective covering of the living diatom; yet, in a kind of unexplaned general way, the experiments upon these artificial films are supposed by some to strengthen the "bead theory," although the conditions under which the spherules are formed probably differ as decidedly from those surrounding the growth of the diatom, as does the manufacture of shot from a natural formation of lead. As has been shown by Mr. Slack, a very slight change in the conditions of the experiments is often followed by a difference in the character of the films produced. (Monthly

Microscopical Journal.) It might, perhaps, be reasonably inferred that a still wider diversity exists where the conditions are so very unlike as they undoubtedly are in the natural and artificial process in question.

Tolle's new duplex front 1-10 inch and 1-6 inch objectives easily displayed the globular form of the silica spherules as well when the full angle of light was used as when it was cut down to 32°, maintaining their usual superiority in definition over lenses of a less angle of aperture. Now, with this same exquisite definition, and without change in illumination, we have diatoms without the appearance of beads; but the angular netting-ridges, to give the shell the greatest strength with the least weight, are seen delicately tinted like the median bands and other smooth spaces, and are continuous with them. In the case of the films, as is the case with the diatoms, the definition was exceedingly sharp, in fact the best the writer has ever seen; and the only inference that has proved satisfactory to his mind is that there is a want of parallelism in structure between the markings of diatoms generally and artificial silica beads.

If a mechanic had a plate of glass, and, wishing to strengthen it, cemented to its surface rows of hemispherical boxes, thus adding to its weight, and leaving the spaces between the elevations as weak as before, he would do just what current theory will have it nature has done for the diatom: clothed it with a beautiful ornamentation that is really a damage to it. Would it not have been better to let the silica always form smooth, as it does in portions of the surface of some species, and in the processes of others?

To repeat, that the same exquisite instrument, with the white cloud central illumination most favorable for correct observation, should show diatoms further from the beaded appearance than manifestly inferior glasses do, and, at the same time, show silica films clearly and better in spherules, seems to be good evidence of the correctness of the observations on both objects, and that only in this negative manner are artificial silica formations capable of elucidating the question of the structure of the siliceous envelopes of living organisms. Among all living things, but very few have the proper characteristics to enable them to secrete a siliceous covering. How impossible it is for us to explain why it is that the diatom grows a siliceous coat while its neighbors, the euglena, desmids, protococcus, etc., do not. How utterly futile then is any attempt to imitate nature when such delicate distinctions in the quality of organic matter produce such widely separated visible results.

In using the 1-10 inch objective above named with an opaque illuminator, the silica spherules appear as shining globules in balsam, a result which, after many trials, was not obtained upon diatoms, either dry or in balsam. *Pleurosigma attenuatum* and *navicula rhomboides* were seen distinctly in squares or checks, and *pleurosigma angulatum* in hexagons, all dry mounts. Powers as high as x 2500, with the 1-10 inch and 1-50 inch objectives, were successfully used with the opaque illuminator.

That there are many diatoms with angular and branching frame work markings, one or more sets of ridges, or circular or oval depressions, is probably susceptible of satisfactory proof. There are species with circular holes or depressions; and the intervening stronger space varies from a flat surface in some species all the way to an elevated angular net work in others; and considerable variation in these markings may often be found in a single individual. The writer has numerous fractured specimens in which the line of fracture clearly follows through the depressions, and leaves the projecting points of the grating plainly to be seen.

The memoranda of a few observations having a bearing on the question are appended.

Coscinodiscus occulus iridis. Best illumination, at a north window, from white clouds. The specimen very large, and the two plates separated. The inside layer perforated with circular openings; no film detected. The plate is thickest on the border of the openings, and the hexagonal net-work of the outside plate lies in the depressions between and every where around these thickenings of the outside plate. The outside plate is furnished with a thin film over each hexagonal areola, with a fine angular branching net-work extending out from the coarse hexagonal ridges into the films to strengthen them, and is coarsest nearest the ridges, and is very fine, or, in some cases, entirely diaphanous in the central parts of the areolæ. The film is seen perfectly along the line of fracture, which always passes through the depressions. The thick portion next the holes, in the inside plate described above, occasionally extends beyond the line of fracture, owing to its greater strength. Distinct shadows of the sides of the hexagons are observed as the mirror is thrown to one side or the other.*

Aulacodiscus Samœnsis. Structure the same as Coscinodiscus.

Terpsinœ Americana and *T. Musica.* The structure of both the same. A distinct angular open net-work, porous almost like a sponge. As the objective is lowered the outside markings gradually become indistinct, as the lower and finer ones of the same general character come into focus.

Epithemia Hyndmannii, S. and *E. turgida.* An outside plate with hexagonal depressions and net-work, strengthened by internal transverse ribs. It breaks through the depressions and leaves well marked projecting points.

Campylodiscus. The various species of this genus are seen with perforated plates and the line of fracture running through the holes.

Trinacria Regina. Perforated plate, with fracture through the holes.

Cymbella. Very large members of this genus, observed in hundreds of specimens, with structure resembling grating, and fracturing through the depressions, leaving the points of the grating distinctly projecting.

Gomphonema geminatum. This shell is very instructive, for the ribs radiate and branch, diminishing in strength toward the margin in the best way to make the shell strong and light. The line of fracture runs through the so called beads in any direction.

Stauroneis Stodderii. A peculiarly and very strongly marked shell. It has coarse longitudinal ridges and furrows, and, it seems, slightly radiating transverse ridges passing over and across the longitudinal ones and through the furrows. It is certainly covered with strong corrugations, and Mr. Stodder is without doubt correct in quoting this species in opposition to the bead hypothesis.

The above studies have all been made with very fine Tolles' 1-50th, 1-10th, and 1-6th inch immersion objectives; and monochromatic light, lamplight, and daylight have all been resorted to. A great variety of accessory apparatus has been employed, including an opaque illuminator. A few of the observations were corroborated while using an excellent Powell & Lealand 1-16th inch objective.

ON THE MEASUREMENT OF AIR-ANGLE.

From the Boston Journal of Chemistry.

Mr. Brooke's indorsement of Mr. Wenham's use of the triangle, as quoted in this journal for May current, has more significance than he probably intended or contemplated. It runs as follows: "Mr. Wenham is

* Compare with the careful and very accurate observations of Mr. J. W. Stephenson, M. M. Journal, Vol. x., page 1.

unquestionably right in stating that if an isosceles triangle be described, the base of which is ten times the measured diameter of the front lens, and the altitude ten times the measured distance of the focal point from the same surface, the vertical angle of that triangle will correctly represent the *maximum available* aperture." (From the Annual Address of President Charles Brooke before the Royal Microscopical Society, London, February, 1875.)

In my article discussing angle measurement I limited the case to 170° in air. But the argument is easy from that to *infinitely near* 180°, and, when in fact inappreciably different from that, if at all, it practically is that angle, if only proven infinitely near. But the utmost breadth of pencil that can enter a plane surface of crown-glass (of index 1.525 very nearly) is narrowed to a cone of rather less than 82° within the body of the glass (or "balsam") necessarily and certainly, and is known as the *interior* or "balsam" angle. The exterior angle can always be known from the interior, and *vice versa*, and according to familiar law. All balsam mounts are known to be limited to this *interior* cone for their greatest obliquity of illumination of the object. This in practice is so universal that nowhere has more than this 82° of interior illuminating pencil been even suggested as possibly available by the objective, until within five years, and is even now heard of in the high quarters only with the utmost impatience of attention, and with no toleration.

However, as this Brooke-Wenham rule of the triangle, by its terms and also from the nature of the proposition itself, applies for the measure of "balsam" or interior angle exactly as for that of a dry mount or air-angle (of a certainty this will not be denied), therefore let us see how runs the application.

Here are the data according to Mr. Wenham. Diameter of front lens, 0.043 of an inch. Focal distance in "balsam" (through glass cover to the object in balsam), 0.018 of an inch.* The objective as adjusted when measured for angle in London, as also here, was (by its construction) corrected for thickest cover, and therefore this focus of 0.018 is a corrected focus, and it follows that if the diameter is correctly given, the vertical angle of this triangle, derived from diameter and "median height," would be the measure of the angle in "balsam," viz: 88°. Thus, according to Mr. Brooke, Mr. Wenham's doctrine and measurements of the triangle combine to prove 88° of balsam angle in this very one-sixth objective. But 82° of balsam angle represents 180° of air-angle, confessedly. Thus, again, his own rule, legitimately applied, according to Mr. President Brooke, establishes the fact of a maximum air-angle for the one-sixth, which as measured for angle by Mr. Wenham, was made to seem to have only 112°. Full angle proven and "balsam" angle to spare, six degrees surplusage!

Although this objective (according to my own measurements) has the capacity to transmit to the eye an angular pencil of 98° from an object in balsam, under glass cover, on the ordinary glass slide, still, as the lower exterior plane surface of the slide can not transmit more than 180° of exterior pencil, that as already stated limits the illuminating pencil to 82°. These additional 16° of interior pencil thus cut off from access to the object can be rendered available only by in some way cancelling that first, lower surface in the path of the light. This can be done in several ways. The most obvious is the use of a plano-convex lens, with water, glycerine, or balsam contact to the slide; otherwise, a semi-cylinder, preferably with

* Monthly Microscopical Journal, for May, 1875, p. 225.

facets, plane, at various obliquities, worked or placed on the cylindrical surface. For this case of 98° interior angle, the facet of most obliquity would be only 48° from the axis (with a dry object, of course, light beyond 41° would be of no avail—field in darkness). Also for the same purpose an immersion objective of suitable angle can be used under the stage as a condenser. Anything to cancel the lower surface of the slide effects the purpose, *i. e.*, gives passage of these ultra rays into the glass.

To be sure, when we talk of more than 82° of interior angle the corresponding exterior ray is above the plane of the slide, or of face of objective, or if you please above the stage! And this too is exactly accordant with experience, for during years now I have practiced the resolution of difficult diatoms in balsam by canceling the upper surface of the slide, and thus effecting the utilization of these ultra-limital rays. In this case the light entering the slide from above and impinging directly (without refraction) upon the lower interior surface of the slide at a greater obliquity to the axis than 41° (but within the interior range of the objective-aperture) obviously would be totally reflected back from the lower surface (second and anterior surface) of the slide at the same obliquity, and, traversing the object, be transmitted by the objective to the eye.

This narrow pencil of 8°, yea 4°, and even less, has done the work. In the case of resolution with light entering from above, all light of less obliquity to axis than 41° would pass through the slide, emerging at the lower surface. The pencil thus lost, or dismissed, is the whole pencil that any dry objective can transmit. Thus there is proof of the efficient use of the ultra-limital rays alone, by exclusion of all others.

The work to be done is to well correct even more than these extra increments of aperture already made well available.

R. B. Tolles.

THE MICROSCOPIC APPEARANCES IN INFLAMMATION OF CONNECTIVE TISSUE.

From Monthly Microscopical Journal.

Dr. G. Thin has communicated a valuble paper on this subject to the Royal Society. The following abstract of his views is taken from the 'Proceedings of the Royal Society' (No. 160). The author, referring to observations recorded in his previous papers, distinguishes in the cornea primary bundles of fibrillary tissue, which are covered by elongated flat cells, layers of quadrangular flat cells (which are analogous in appearance and relative position to the layers of cells described by him as investing the secondary and tertiary bundles of tendon), and the stellate cells. To these he now adds a description of parallel chains of spindle-cells, each cell having two processes, one at each end of the spindle, by which it is joined to its fellows on either side. These cells are co-extensive with the cornea substance, and are present in every interspace of the primary bundles, and consequently layers in different planes cross each other at an angle.

They can be occasionally seen in thin vertical sections of the fresh frog's cornea, treated in osmic acid; and from such preparations a cell with its terminal processes can be sometimes isolated. They are more easily seen in similar sections which have been 15-30 minutes in half per cent. solution of chloride of gold, and then sealed up in concentrated acetic acid and examined 24-48 hours afterwards.

They have no anatomical continuity with the stellate cells.

In the fresh frog's cornea examined entire in serum, the structure, looked at through the anterior epithelium, can be seen to be broken up by clefts, the borders of which have a double contour. These clefts extend from the epithelium to a varying depth into the fibrillary tissue. They are arranged sometimes concentrically, and sometimes in waving lines, which give off branches which are narrower as they approach the centre of the cornea. The double-contoured borders are not parallel to the median plane of the cornea, and can be traced only by changing the focus.

From the existence of these clefts the author infers a division of the cornea substance into compartments equivalent to the secondary and tertiary bundles of tendon.

In inflammation the clefts are much widened, and their finer ramifications become visible. In preparations of inflamed cornea different tracts of cornea substance bounded by the clefts are colored of different shades by chloride of gold, the difference affecting the fibrillary tissue, and more markedly the spindle-cells.

The serous contents of the interspaces of the inflamed cornea differ in character from those of the healthy cornea, inasmuch as the former show, more abundantly, the dark granular substance which results from the reduction of the chloride of gold.

In a very early stage of inflammation (after a few hours) the distension of the narrow spaces between the primary bundles and of the wider and more yielding spaces between the lamellæ, corresponding to the larger bundles, favors the action of chloride of gold; and preparations can thus be obtained by this reagent which show that the two kinds of flat cells which cover the respective surfaces are arranged after the manner of an epithelium. The cells thus seen can be identified by their size, contour, and arrangement, as those which are isolable from the healthy cornea by warm saturated solution of caustic potash, and which can be seen in preparations sealed up in aqueous humor.

A similar distension occasionally permits the demonstration of the layers covering the secondary bundles of tendon.

That the successful gold reaction in such cases is probably due solely to the distension of the interspaces, is inferred from the fact that in the tendo achillis of frogs which have died from disease, and have been some hours in water after death, the author has obtained gold preparations showing not only the cells of the secondary bundles (Ranvier's cells), but also small groups of the long narrow cells which cover the primary bundles.

In the cauterized frog's cornea, examined in blood-serum after twelve hours' inflammation, portions of the primary bundles are found lying loose on the surface. These detached portions have a nearly constant length, a uniform breadth, sharply-defined even borders, are sometimes puckered transversely, occasionally show a faint appearance of longitudinal fibrillation, and are sometimes cut transversely, at one or more points, by straight hyaline lines. They resemble accurately the primary bundles of the neurilemma of the sciatic nerve and the rods of the retina of the healthy frog.

They stain deeply in gold preparations, and are then always puckered transversely.

In gold preparations of the inflamed frog's tongue, isolated primary bundles, identical in appearance and breadth with those of the inflamed cornea, are to be found.

The depth of staining by gold shows that the constituent elements of the primary bundles undergo a chemical change in inflammation.

The author has studied, by means of chloride of gold, the effects of inflammation in the quadrangular and in the long flat cells which cover

the bundles in the interior of the cornea, but chiefly in frog corneæ sealed up in blood-serum, the latter method being found more certain to give available preparations.

The only appearance observed, anterior to a complete destruction of the cell, was a division of the nucleus into two or more parts. In serum preparations the products of the division assumed the form of circles of highly refractive particles Similar particles were sparsely scattered in the substance of the cell.

The area of any one circular product of this division was always much smaller than that of the undivided nucleus.

In regard to the stellate cells, the author questions the correctness of the accepted theory, which implies an identity of the cell and its processes with the visible protoplasm. He considers that the refractive particles, which constitute what is visible in the cellular protoplasm, are suspended in a fluid, similarly to the pigment-granules in the pigment-cells as described by Mr. Lister. The phenomenon described by German investigators as "zusammenballen" of the cell processes, he attributes to a collection of the protoplasmic particles in the centre of the cell, similar to that which takes place in concentration of pigment. This opinion is borne out by a comparison of gold and osmic acid preparations. In conditions in which, by the former process, an isolated globular body is seen, osmic acid preparations show that the anastomosis of the thread-like processes remains complete. Reasoning analogically from the results obtained by gold in other tissues, he infers that it is what may be described as the contents of the cell and processes which stain by that method.

Treatment by osmic acid is the only reliable method by which he has obtained satisfactory preparations showing the stellate cells in the inflamed cornea. The advantages of this mode of treatment are much enhanced by subsequent staining with red aniline, which especially differentiates the protoplasm and processes. Subsequent staining by hæmatoxylin renders the nuclei visible.

The only change, except that of destructive disintegration, observed by the author as a consequence of inflammation in the stellate cells, consists in the anastomosing processes being, in gold preparations, occasionally represented by fine darkly-stained lines, on which are a series of small globular swellings placed at short regular intervals, giving any one process an appearance identical with that presented by an ultimate nerve-fibrilla in a gold preparation. The same appearance is also to be seen in osmic acid preparations, and is suggestive of points of communication between the lumen of the process and the interfibrillary space. (This is the only form in which the author has seen the processes of the stellate cells in inflamed corneæ in gold preparations. They are usually invisible by that process.)

Appearances indicative of a dividing nucleus were rarely seen, and their interpretation is doubtful. Both in respect to the nucleus and the processes the stellate cells are the most stable of all the cellular elements of the cornea.

Between the layers of the superficial corneal epithelium a network of stellate cells can be seen in serum preparations of inflamed cornea. Indications of similar cells can be seen in gold and hæmatoxylin preparations of the healthy cornea.

In inflammation the cells of this network show a very great increase in size as compared with their appearance in health.

The changes produced by inflammation in the spindle cells may be divided into three stages:

(*a*) Preparations examined in serum show that the cell-protoplasm has

become increased in amount, and that the cell-processes can be distinctly traced. This stage can be observed after twelve hours' inflammation, resulting from slight cauterization in a winter fog. The swelling of the protoplasm is often confined to one or more tracts of the cornea, one of the above mentioned clefts separating the area of this appearance from that of the normal cornea. The area extends from the neighborhood of the cauterized part toward the limbus.

(*b*) The swelling of the protoplasm extends along the processes from one cell to the other, a chain of spindle-cells being often represented by a long column of protoplasm on which there are very slight constrictions. This description applies to osmic acid preparations. Deep staining with red aniline and subsequent treatment with acetic acid renders the nuclei visible in this protoplasmic column. This stage is well seen in osmic acid preparations of a rabbit's cornea which has been twenty-four hours inflamed by the passing of a thread.

(*c*) With more or less increase in the amount of protoplasm, and with or without its presence in the processes in a granular form, nuclear bodies (resulting from a division of the nucleus) are seen in osmic acid preparations to be contained in, or partly expelled from, the cell, which are identical in appearance with the red blood corpuscles seen in the new vessels in the same preparations. This identity in appearance is further maintained by staining osmic acid preparations with red aniline, in which the nuclear products and red blood corpuscles are stained a like tint and deeper than the other elements. The author infers from these appearances that in inflammation the nuclei become free bodies, which are equivalent to red blood-corpuscles.

The appearances described by Key and Wallis, Cohnheim, and others as white corpuscles in "Spindleform," are seen in osmic acid preparations to be spindle-cells made more prominent by inflammation.

The "spiessartige Figuren" seen in gold preparations are produced by the protoplasm which immediately surrounds the nuclei of the spindle-cells, being visible, while from the mode of preparation the connecting processes are invisible.

White blood-cells in the inflamed cornea can be identified with most certainty in osmic acid preparations. They are found in groups in the wider spaces, in rows in the nerve channels, and between the primary bundles (corneal tubes of Bowman), and in large numbers in the tracts between the larger bundles. They are mostly round, sometimes club-shaped, never pointed at two extremeties as an elongated shuttle-shaped mass (that is, never *spindleforming, spiessartig*). A small minority consist of a double body formed by two rounded globular masses joined by a smooth isthmus. When stained by hæmaroxylin, nuclei are found in either end, but not in the isthmus. The auther infers that we have here a corpuscle in process of division.

In rabbit corneæ, in which inflammation has lasted about a week, some white corpuscles are seen with uneven contour; and bulging outward from, or lying close beside, them are bodies evidently nuclear, and which are affected by osmic acid and subsequent staining with red analine, in a manner idenical with the red blood-corpuscles seen in blood vessels in the same preparation. The identity of the escaped nuclei with red blood-corpuscles is shown by a comparison of their respective size, evenness, color, and contour.

The author infers a production of red blood-corpuscles in inflammation rom the nuclei of the white blood-cells.

In observations on human blood, and that of the mouse, by staining with

hæmatoxylin, he has found that while the great majority of the red corpuscles do not quickly stain in a weak solution, there are some which at once stain a deep blue, and that there are white corpuscles in which a narrow protoplasmic margin encloses a deep blue nucleus similar in contour and size to the stained red corpuscles. Among the red corpuscles of the frog are a minority which are recognized as being red corpuscles by their size, smooth contour, and absence of granulation, but in which there are no hæmoglobin, and the nucleus quickly stains blue in solution of hæmatoxylin, like that of the white cells.

Transitions occur in which a less and less capacity of staining on the part of the nucleus takes place, *pari passu*, with an increase in the color characteristic of hæmoglobin in the body of the cell. In the fully developed red corpuscle, the nucleus stains only after it has been for some time in contact with a weak solution of hæmatoxylin.

The author has observed in the blood of the mouse fœtus the nuclei of the nucleated red blood-cell escape from the larger cell, and then become indistinguishable in form and appearance from the small red corpuscles of the mature animal present in the blood under examination.

These observations, taken in connection with the bodies that are formed in the spindle-cells and white corpuscles in inflammation, support, as the author believes, the doctrine of Wharton Jones, in regard to the formation of the red blood-corpuscles.

The mode of formation of capillary blood-vessels he believes to be identical in inflamed and in fœtal tissue. In studying this subject he has found special advantages from the use of osmic acid, with or without subsequent staining in hæmatoxylin. The stages in this formation are as follows.

(*a*) The spindle-cells enlarge and contain several nuclei which can be identified, while within the cell, as being of a similar nature to red blood-corpuscles. A current of blood plasma from the nearest vessels passes, at the same time, into the interfibrillary space in which the spindle-cells lie.

(*b*) The nuclei escape from the spindle-cells into this space, where they are indistinguishable in appearance from the ordinary red blood-corpuscles.

(*c*) By a process of diapedesis the formed elements of the nearest blood-vessels pass into this space, and the circulation is established.

Various appearances lead the author to suppose that the fibrine of the plasma solidifies on the outer surface of the current and forms the substratum of the new vessel, and on this substratum the white blood-corpuscles fix themselves and spread out as an epithelium.

From interfibrillary spaces in the inflamed cornea, in which formation of blood-vessels was actively taking place, the author has isolated white corpuscles in various transition stages toward the appearance and shape of epithelium; and, from rapidly enlarging vessels, cells which, from their form, he believes to be transitionary to that of smooth muscular fibre.

As the new capillary forms, the enlarged spindle-cells decrease to their ordinary size.

In preparations of blood-serum of the frog sealed up, after a few days, the hæmoglobin may be observed to assume special forms inside the corpuscle, or to disappear from it, and so produce changes in the appearance of the corpuscle identical with those described by Arnold as taking place in the tongue of the living animal after diapedesis.

The above observations were made chiefly on the cornea of the frog and rabbit; and the inflammation was mostly produced by solid nitrate of silver, the passing of a thread, and the application of methylated alcohol.

In the winter frog (*Rana esculenta*), cauterized in the center of the cornea,

the first entry of white corpuscles attributable to inflammation was observed, after forty-eight hours, in the wider spaces near the limbus. After four days they could be observed in considerable numbers, and 2-6 could be seen in one so called space (*lacuna*).

ON THE COSMIC DUST WHICH FALLS ON THE SURFACE OF THE EARTH WITH THE ATMOSPHERIC PRECIPITATION.

By A. E. Nordenskiold.

On the occasion of an extraordinary fall of snow, which took place at Stockholm in the first days of December, 1871, M. Nordenskiold was curious to ascertain if the snow, though apparently pure, did not contain solid particles involved in its fall. When snow had already been falling for several days, and must therefore have removed from the atmosphere the greater part of the impurities which it might contain, he collected upon a sheet a cubic metre of fresh snow, which left on fusion a small solid residue. *This consisted of a black powder resembling coal. Heated, it gave liquid products of distillation; calcined, it was reduced to a brown-red ash. Moreover it contained a number of metallic particles attracted by the magnet, and giving all the reactions of iron.*

The experiment, having been made in the vicinity of a large city, was not sufficiently conclusive; and it was important to repeat it under other conditions, at a distance from every human habitation and industry. This was done by Professor Nordenskiold in the Swedish polar expedition, in 1872, which was detained by the ice as early as the commencement of August in about the 80th degree of north latitude, before reaching Parry's Island to the north-west of Spitzbergen, where it was to winter.

The examination of the snow which covered the icebergs, having evidently come from still higher latitudes, showed that it was strewn with a multitude of minute black particles, spread over the surface or situated at the bottom of little pits, of which the upper layer of snow presented a great quantity, or, again, lodged in the lower strata. This powder, which became grey on drying, included a large proportion of metallic particles attracted by the magnet, and became coated with copper by immersion in sulphate of copper.

An observation made a little later upon other icebergs proved the presence of a powder absolutely identical, in a layer of granular crystalline snow situated at some centimetres depth beneath a layer of light fresh snow and a second layer of hardened snow.

In the course of the expedition the author was able to collect several milligrammes of this substance, which on chemical analysis was found to contain metallic iron, phosphorus, cobalt, and probably nickel, with a residue insoluble in chlorhydric acid, and containing, among other things, fragments of diatomaceæ.

The powder thus collected on the polar sea to the north of Spitzbergen exhibits the greatest analogy with the dust previously observed by M. Nordenskiold on the snows of Greenland, and described by him under the name of *kryokonite.* These two precipitates have probably a common source, at least as regards their metallic and magnetic portion, composed of iron, cobalt, and nickel, the cosmic or meteoric origin of which does not appear contestable.

M. Nordenskiold has also found analogous ferruginous particles in hai

stones collected at Stockholm. It seems, therefore, well established by these various observations, that in the polar regions there often falls with the atmospheric precipitation a cosmic dust, containing the metals, iron, cobalt, and nickel, phosphoric acid, and a carbonaceous organic powder. M. Nordenskiold remarks on the interest this discovery may have for the theory of shooting-star showers, auroræ boreales, sun-haze, etc., and on the part which may be played in the economy of our globe by this importation, slight, it is true, but perpetual, of new matter to its surface.

Before quitting this interesting subject, we will remind our readers of the results recently obtained by M. Tissandier in his study of the atmospheric dust gathered at Paris, which was always found to contain a notable quantity of iron.—*Bibliotheque Universelle, Archives des Sciences, Phys. et Nat.* Nov. 15, 1874, pp. 282-284.

A NEW WORK ON THE MICROSCOPE.

The "Industrial Publication Co.," of New York, have just issued a little work designed for beginners in the study of microscopy, by MR. JOHN PHIN, editor of the Technologist. Its title is "Practical Hints on the Selection and Use of the Microscope." It is of 16 mo. size, and contains 131 pages.

Just such a little work upon the microscope has been long needed. Most of the works upon the microscope are large and expensive, containing, as they do, more or less elucidations of the elementary principles of optics, lengthy descriptions of the instruments of different makers, and a large amount of matter pertaining to botany, zoology, physiology, etc. In the book before us we have presented only the information that is needed for the successful management of the microscope and its accessories; the student being directed to their proper sources for other matters. The result is just what every beginner wants—a small, cheap work, which, showing him how to use his instrument, will enable him to go to work in any department he may desire to work in.

Almost any work on any subject is open more or less to criticism, and Mr. Phin's is not altogether an exception. The explanation and discussion of magnifying power we regard as somewhat deficient in several respects. It seems to us the author does not make some things as plain as he might have done. As he says, his work is designed for beginners, and not for savants, and therefore elucidations which may be very plain to those who are already conversant with them, are not unfrequently impenetrable by the tyro. Take for instance a sentence on page 45: "Scientific men are, however, agreed that to express a magnifying power in surfaces, is to convey a wrong impression in regard to the assistance rendered by the instrument to the natural vision, for a careful study of the physiology of vision, teaches us that our power to appreciate and distinguish the features of any object, depends upon the distances to which the characteristic points of that object are separated, and this can be measured only by linear, and not by superficial units." Now all this to the well informed would be as clear as the noonday sun, but, from our experience in teaching, we feel sure that the average *not well informed*, just those for whom the book is written, would not have that thorough comprehension of the fact that is designed they should have.

In treating of magnifying power, we find no clear explanation of how the power of a lens may be increased many times by the use of eye-pieces

of different powers, and by increasing the distance between the eye-piece and objective by extending the draw-tube. We consider information on this point of the greatest importance, and regard the omission of it a serious oversight. An inexperienced person, wishing to purchase a microscope, having a range of power from fifty to two hundred or two hundred and forty diameters, would, in many instances, *be accommodated* by a dealer with a stand supplied with a one inch and a half inch objective, and an A and C eye-piece, and would have it shown to him by the dealer by actual measurement, that the highest magnifying power was truly two hundred or two hundred and forty diameters, and yet this power would not be the efficient power which is obtained by a quarter inch objective and A eye-piece. The amplification in both instances is the same, but the half inch is made to have the same power as the quarter inch by the increased magnifying of the image of the object by the deep eye-piece, and not by the increased magnifying of the object itself; and, consequently, increasing the magnification of the half inch from one hundred diameters, which it would have with an A eye-piece, to two hundred diameters by means of a C eye-piece, would bring nothing new into the field, but would only increase the size of what was already there; and with only the best of lenses this increase of magnitude would be more or less at the expense of sharpness of definition. A student of microscopy should be made to understand, from the very start, that it is only the objective lens that magnifies the object, and that it is the office of the various eye-pieces to magnify the image of the object.

Our author states, that "a good two-thirds, one-fifth, and one-tenth, giving magnifying powers of from fifty to one thousand diameters, will, in general, answer most requirements." Now a one-tenth has a power of 1000 diameters only when it is used in conjunction with a C eye-piece, and a two-thirds with the same eye-piece has a power of 150 diameters. With an A eye-piece the one-tenth has a power of only 500. The conditions, therefore, necessary for the microscopist to have a range of power from 50 (properly 75, not 50) to 1000 diameters with the lenses enumerated, are that he should have not only an A but a C eye-piece. Of course, an expert needs not to be told these things, but a student does, and it should be the object of an elementary work to tell him.

Again says our author: "For the study of botany, and the ordinary facts of vegetable physiology, a power of 300 is sufficient." But a power of 300 obtained in what way? Is it meant by using a one-sixth with an A eye-piece, or a four-tenth with a C eye-piece, or a one inch by a still deeper eye-piece? These are important questions, and yet no light is thrown upon them.

In our opinion, a good one inch objective, half inch, and one-fifth, with proper means of amplification, "will, in general, answer most requirements." A very best one-fifth will endure amplification up to several thousand diameters, and as the highest degree of angle of aperture can be given it, there is nothing which has as yet been disclosed by a microscope that a one-fifth may not be made to show. In fact, the common every day work of a microscopist does not require a power, in nine cases in ten, of more than a half inch, and it is probable that a lens that is employed more than any other is a two-thirds. We speak, of course, of first class objectives, and have no reference to the cheap, worthless French lenses which are supplied to many stands.

Notwithstanding Mr. Phin's little treatise does not explain some things as fully as we think it should, yet we regard it as the best work for beginners with which we are acquainted, and cordially recommend it to all such.—ED.

SAN FRANCISCO MICROSCOPICAL SOCIETY.

The stated meeting of the San Francisco Microscopical Society was held in its rooms on Thursday evening, June 17th, with a good attendance of members. In the absence of Presidents Ashburner and Hyde, Mr J. P. Moore was called to preside. Mr. E. G. Buswell was present as a visitor.

Captain J. M. McDonald and Thomas Sunderland, Esq., were proposed for life membership, and Prof. W. H. Brewer, of New Haven, as a corresponding member.

The Secretary announced additions to the Library by subscription and purchase of the June number of *Nature* and *American Naturalist*, and the last edition of Carpenter on "The Microscope and its Revelations."

The cabinet was enriched by the donation of two slides by Mr. Ewing, mounted with verticle and longitudinal sections of woods from the East Indies, and eight slides from Mr. Charles Stodder, of Boston, mounted with sundry diatoms in balsam, diatoms *in situ*, and one with substances from the stomach of a mastodon.

Dr. Harkness presented two slides mounted by him with the smut on oats (*ustilago carbo*), and the rust on oats (*uredo trichobasis*)—both found near San Francisco. In presenting the slides, the Doctor made some verbal allusions to these fungal growths and their detriment to growing cereals.

Captain John H. Mortimer, of New York, one of the society's most valued corresponding members, presented the society, through Mr. Kinne, with a slide mounted with some two hundred and twenty-three diatoms, embracing fifteen or more beautiful varieties, arranged in groups of stars and crosses about the central feature, which formed the script initials of the society—"S. F. M. S."—and was not only received with enthusiastic demonstrations for its great beauty, but from the fact of its presentation evincing an interest, by its distant members, in the progress of the society.

Another evidence of the fact that the doings of the Microscopists in California are known to the utmost parts of the earth, was by the receipt from Colonel E. Sparrow Purdy, of the Egyptian Army, of a curious gnat obtained at Dongola, Nubia, which, accompanied by an extract from a letter to his father, explains the matter as follows: "The small gnats that I wrote you about, they say, are quiet at night, but it is now ten o'clock at night, and they are crawling all over my paper and face. I have just killed two of different species, and leave them in the paper. Give them to my old friend, Dr. Harkness, who will put them through his microscope. They are only found between the third cataract and this place—Dongola. At sunset they are very bad. We read the proceedings of the Microscopical Society with great interest."

Mr. Hanks exhibited a very curious growth from the body of a common house fly, which was stated by him to have been living when given to him. A twisted fibrous substance about half an inch in length rose perpendicularly from the thorax near the base of the wing, and was apparently divided into three parts, two of which had been loosened at their point of attachment. It is to be presented to Mr. H. Edwards, and his report on the matter is looked for with interest.

The new four system immersion tenth objective of Tolle's was received by the society, and its capacities were just glanced at by the members, by placing under it one or two test objects. Enough was seen in a few moments to convince all present that the society had a wonderful addition to their list of objectives.

We are pleased to see that some of our wealthy citizens are interesting themselves in our microscopical society by becoming life members, and as several others propose to do so at no distant day, we feel assured that a rich and varied library can soon be obtained which will place the members in a position to do more and better original work than they have done in the past.

The stated meeting of the San Francisco Microscopical Society was held on Thursday evening, July 1st, with a good attendance of members. President Ashburner in the chair.

A number of gentlemen were proposed for membership, and the following, whose proposals were received at the previous meeting, were unanimously elected, viz: Thomas Sunderland, Esq., and Captain J. M. McDonald, life members, and Prof. W. H. Brewer, of New Haven, Conn., corresponding member. Edward F. Hall, Esq., a resident member, was transferred to the life roll.

Under the head of donations, there were received a series of twenty-eight photo-micrographs of various tests and other objects from Colonel J. J. Woodward, Assistant Surgeon U. S. A., of Washington, D. C., which will be at once bound suitably, and is an important addition to the library. The CINCINNATI MEDICAL NEWS, *Monthly Microscopical Journal* and *Nature* were received by subscription.

Captain J. H. Mortimer, corresponding member, sent the society, through Mr. Kinne, twelve vials of boilings of diatoms, foraminifera, etc., from various localities, viz: North Atlantic, 1750 fathoms; New Jersey; Rio Janeiro, Brazil; Lancashire, England; Colon, Panama; Pannuky River, Virginia; Barbadoes, West Indies; River Thames, England; Cheshire, England; West Coast of Africa; Iquique, Peru.

Mr. William Ashburner donated a slide mounted by him with red-snow (protococcus nivalis) from Lassen's Butte, Cal.

Mr. C. G. Ewing presented a slide mounted with uric acid from a boa-constrictor, and Mr. J. P. Moore donated five slides mounted by him with wood sections, as follows: *Alnus Oregana, Dirca Occidentalis* and *Menziesai ferruginea*, the latter from Alaska.

COCHINEAL INSECT.

The following communication, which fully explains itself, was listened to with interest, and the living insects were handed to Mr. Hanks for the purpose of testing and reporting on their dyeing qualities:

To C. Mason Kinne, Esq., Secretary Microscopical Society:

MY DEAR SIR: During a recent visit to Grass Valley and Nevada City, I found the bushes of manzanita (*Arctostaphylos tomintosa. Dongl.*) covered with a species of coccus, resembling closely in form and size the species so valuable in commerce, from which is produced the exquisite pigment, carmine, and known to naturalists as coccus cacti. For miles and miles along the road the leaves of the manzanita were covered with these creatures, and it struck me that some commercial importance might be attached to the insect, as it seemed in such immense numbers. Most of the members of the genus are in some way or other quite valuable, the "lac insect" of China being one of them; and it is quite possible that we have in California a source of profit furnished to us by the insect world as yet unknown and unrecorded. I enclose you a few specimens of both sexes, the male being winged and the female the producer of the dye. Perhaps some of your members might subject them to chemical analysis, and discover if any dye could be extracted from them. The abundance of manzanita in our foot

hills would, if such were the case, render their cultivation quite easy, and no real obstacle could exist to the introduction of this valuable and interesting addition to the commercial product of the State. At all events, the specimens will prove a most attractive object to our investigators, and, as such, will be worthy of your acceptance. I have every reason to believe that the species is unknown to science, and I shall shortly offer a description of it, as such, under the name of Coccus Arctostaphylos.

Yours sincerely, HY. EDWARDS.

The stated meeting of the San Francisco Microscopical Society was held on Thursday evening, July 15th, with Vice-President Hyde in the Chair. In addition to a good attendance of resident members, Dr. C. G. Kenyon, city, and Mr. Sam. B. Christy, of Berkeley, were present as visitors.

It was announced to the Society that Mr. J. P. Moore had been appointed Librarian by the Trustees, to have charge of the library, instruments, and collection of objects, and he is now engaged in arranging and classifiying the latter, the large number of donations having rendered the work absolutely necessary.

The members were also informed that the Trustees had ordered one of Nachet's microscopes, with a good list of accessories, and also one of Kinne's self-centering turn-tables.

The election of new members resulted in placing the following-named gentlemen on the roll, viz: Messrs. Leland, Standford, and O. C. Pratt as life members; Mr. Henry B. Berryman as a resident member, Mr. Arthur B. Emmons, of Boston, as corresponding, and Col. J. J Woodward of Washington, D. C., as an honorary member.

Three numbers of *Nature* and one of *World of Science* were added to the library by donation, and Mr. Ashburner enriched the cabinet by the addition of twelve slides mounted with diatoms, polycystina, and foraminifera, from the boilings presented by Capt. Mortimer at the previous meeting.

Letters from Dr. J. A. Thacker, Ed. CIN. MED. NEWS., and Capt. Mortimer were read, and while the former complimented the Society on its energy and earnestness, the latter gentleman stated that he would not be unmindful of the interests of the Society on his trip to this city, where he hopes to arrive sometime in December next, in command of the ship *Hamilton Fish*.

Mr. Hanks read before the Society a paper on Micro-Mineralogy, interesting not only to the mineralogist, but to the general scientific student, and which we purpose giving in our next issue.

THE FRENCH EXPLORING EXPEDITION.—This expedition will make researches into the depth and animal oaganizations of the Mediterranean. Soundings and dredgings similar to those made by the "Challenger," will be made by a steamer specially provided with microscopes, photographic apparatus, and means for preserving new or rare specimens of marine zoology.—*M. Micro. Jour.*

FILARIO IN THE HOUSE-FLY.—Professor Leidy (of U. S. A.) has recently found that the common house-fly is afflicted by a thread-worm, about a line in length, which takes up its abode in the proboscis of the fly. From one to three worms occured in about one fly in five. This parasite was first discovered in the house-fly of India, by Carter, who described it under the name of *Filaria muscæ*, and suggested that it might be the source of the Guinea-worm in man.—*Monthly Micro. Jour.*

THE LYMPH OF SMALL-POX.—Dr. Klein gave an account of his now well known microscopical researches on the lympth of small-pox at a recent meeting of the Linnean Society. The virus resides in the solid particles of the lymph, and not in its fluid portion. These solid particles, he showed, were identical with the organisms (schizomycetous fungi), called by Dr. Burdon-Sanderson *micrococci*. They are likewise produced by the granules contained in their interior. Dr. Klein has produced the pocks on sheep by artificial inoculation of these germs. On examination of a pock produced in this manner, the *micrococci* were found in the lymphatic spaces which are formed in the skin at an early stage. They occur in masses or in myceloid threads. At a later stage signs of fructification were observed, and conidia of a *penicillium*-like character were produced in the spaces. The same growth is found in the cavities of the pustules subsequently developed. Dr. Klein has also produced the disease by the injection of lymph directly into the vein. The pustules thus formed were quite the same as those produced by inoculation, and the same *penicillium* growth was found in their interior. The paper was illustrated by various microscopical preparations, etc.

ANGULAR APERTURES.—At a recent meeting of the Microscopical Society, Mr. Henry Slack read a paper on the relation of angular aperture to surface-markings and accurate vision, in which he showed the fallacy of the present system of using high-angled objectives for these purposes, to the exclusion of those of small angular aperture, and pointed out that extreme angles were only to be obtained at the expense of accurate correction and penetrating power.

CLARKE COUNTY MEDICAL SOCIETY.

July meeting.—ISAAC KAY, M. D., Secretary.

The Clarke County Medical Society met on Thursday afternoon, July 8th; Dr. C. Pollock, president, in the chair. Members present, Drs. Carroll, D'Richey, Harris, Pollock, Reddish, Rice, Rodgers, Seys, Stonebarger and Totten.

Dr. Rodgers made some remarks upon the subject of Medical Examination for Life Insurance, and suggested some change in the fee bill of the Society in regard to these examinations. Dr. R. also reported a case of cholera infantum in a child eleven months old. He was called to see the case night before last, and found that the child had not suffered from anything except vomiting. It had been unusually well all the previous day, when at 7 o'clock, P. M., vomiting suddenly set in. The vomiting was arrested soon after prescribing for it, but the purging continued until nearly the time of its death, at one o'clock the same night, after an illness of only six hours. There was extreme thirst. Gave a powder of calomel gr. 1-4, opium grs. 1-16, sub. nit. bismuth grains 2, and acet. plumb. gr. 1-2, and repeated every hour, and administered a warm bath. The child had never been sick before, had always nourished well; and had had but three of these unnatural stools before the doctor had seen the case, at which time also collapse seemed to have fully set in. He spoke of hypodermic injections.

Dr. Seys remarked that in his opinion cholera infantum, pure and simple, was a rare disease. Not half the cases, so styled, were really such, but colitis, entero-colitis, and gastro-enteritis. The pathology was not very thorougly understood. Dr. S. reported the particulars of a case, complicated with convulsions. He knew of no essential difference between cholera in-

fantum and Asiatic cholera. He had found oxide of zinc a good remedy in bowel complaints of children, and frequently gave it in combination with pepsin.

Dr. Harris had more dread of cholera infantum and croup than any other two diseases incident to childhood. He reported a recent case occurring in his practice which had died in twelve hours from the attack. Acid milk sometimes brings the disease on. He did uot much like the hypodermic plan of treatment, partly on account of the abscesses which seem to follow these injections.

Dr. Stonebarger approved ot Dr. Seys' remarks in relation to the pathology of cholera infantum, and the propriety of distinguishing between that disease and inflammation of the stomach and bowels. Dr. S. thought that indigestion was a frequent cause of the disease under discussion. He relied principally on the submuriate of mercury in its treatment.

Dr. Rice agreed with Dr. Rodgers upon the probable efficacy of hypodermic injections of morphine.

Dr. Carroll was called to a case of vomiting and purging in a child seven weeks old. There was a musty odor to the dejections, and cramping of the muscles. Gave calomel, with occasionally a small quantity of chloroform, internally. Gave also Dover powder and aromatic spirits of ammonia. The child recovered. Dr. C. also reported another case of about the same age. There were fetid dejections and severe pain in the bowels. Gave calomel, opium, and chloroform mixture with simple syrup. The case recovered.

Dr. Seys read an essay on syphilis. He claimed that there were three distinct venereal diseases, viz, gonorrhea, chancroid, and syphilitis. We sometimes found two or more of these diseases existing in one person at the same time. The poison of syphilis is carried to all parts of the body. It is self limited, and has a tendency to recovery. One attack gives immunity thereafter; the disease is not infectious, it is conveyed by contact, is destroyed by heat and acids, and may be induced by an absorption through an abraded surface; this poison is contained in the natural secretions of the body, as well as the secretions of the sores. Some authors contended that semen contained the disease. It might be conveyed by vaccinations, by vaginal discharge, whether there be abrasions or not, and it would follow inoculation, even if the parts be cauterized in a few moments after. It was conveyed by inheritance, especially if the mother be diseased at the beginning of pregnancy.

As the time grew late, and Dr. Seys had not finished his subject, the matter was continued over to the next regular meeting in August.

Correspondence.

HOTEL DES BERGUES, GENEVA, SWITZERLAND, June 16, 1875.

PROF. J. A. THACKER, M. D.:

DEAR SIR: In the tour I have just completed through Italy there was no place I was more interested in than the city of Padua, on account of its ancient and world-renowned University.

Other cities and places might more interest the general traveler than Padua, for there is scarcely a city or town in Italy that has not its ancient ruins, works of art, or characteristics that will command attention and admiration.

Among the many places I visited, I might mention the chief attractions

of a few in contrast with Padua. For instance, there is Genoa, with its extensive port and shipping, its fine and numerous palaces and churches, and its beautiful women; Pisa, with its leaning tower, cathedral, baptistory, and Campo Santo; Rome, "the eternal city," with its ancient ruins and greatness, its art, St. Peters and Vatican; Naples, with its museum of ancient curiosities from cities that were near two thousand centuries buried, its Vesuvius, Herculaneum and Pompeii; Florence, said to be the fairest city on the globe, with its Ufizi and Pitti palace galleries, its ancient works of art, its renowned studios and beautiful Cascine; Venice, the city built in the sea, with canals for streets and gondolas for conveyances, with its Mosaic finished Cathedral of San Marco, Palace of the Doge's and terrible prisons; Verona, with its well-preserved amphitheatre and Roman walls, its tomb of Romeo and Juliet, and floating mills; and the beautiful city of Milan, with its magnificent arcades and public gardens and the finest Cathedral in the world. Yet, as I now pass all these in review, I prefer above all to go back to Padua, and there in the University linger in the place where the immortal Harvey received his degree of medicine; where Dante, Petrarch, and Evelyn were students; and where Galileo, Guglielmi, Fallopius, and Morgagni were Professors.

Padua, the most ancient city of northern Italy, is situated twenty-three miles west of Venice, and contains a population of 52,000. It abounds in tradition, and its foundation was ascribed to Antenor, after the siege of Troy.

The appearance of the city is very singular; the houses are supported by rows of pointed arches, and it is of triangular form, surrounded by walls and intersected by canals. The streets are narrow, unclean, and very monotonous; they are bordered by arcades and have no leading thoroughfares, which makes the city exceedingly gloomy. The principal buildings in the city are about a hundred churches, the buildings of the University and hospital, and, the most remarkable, the Pallazzo della Municipalita, the roof of which is very high, towering far above the walls of the edifice, and said to be the largest in the world, which is unsupported by columns.

The University of Padua is one of the oldest in the world. It was quite celebrated in the fourteenth and fifteenth centuries, and was not only then patronized by an immense number of students from all parts of Europe, but also by Mohammedan countries. The present professors of the University are men of great celebrity and distinction, many of whom are decorated with numerous titles of science and art.

The total number of students attending the University last year was 1324.

In the Pallazzo of the University I had the pleasure of seeing the statue of the celebrated Elena Lucrezia Cornaro Piscopia. She was most accomplished; spoke the Hebrew, Greek, Arabic, Spanish, French and Latin languages fluently; was a poetess, an excellent musician, well versed in mathematics and astronomy, and received a degree of medicine.

The present University building was erected in 1552, and looks quite modern compared with the surrounding buildings, some of which have stood for one or two thousand years.

The medical department of the Padua University dates from the third century, and has been in continuous operation ever since that time. Dr. Vincenzo Pinali is president of the faculty. The present professors are, Dr. Francesco Marzolo, Professor of Special Surgical Pathology; Dr. Paolo Vlacovich, Professor of Human Anatomy; Dr. Tito Vanzetti, Professor of Clinical Surgery; Dr. Lodovico Brunetti, Professor of Pathological Anatomy; Dr. Bernardino Panizza, Professor of Hygiene and Toxi-

cology; Dr. Vincienzo Pinali, Professor of Clinical Medicine and Special Pathology and Therapeutics; Dr. Joseph Lazzaretti, Professor of Legal and Police Medicine; Dr. Ferdinando Coletti, Professor of Materia Medica and Therapeutics; Dr. Philippo Lenssona, Professor of Physiology; Dr. Pietro Gradenigo, Professor of Clinical Ophthalmology; Dr. Michele Frari, Professor of Theory and Practice of Obstetrics; Dr. Augusto Leboldi, Lecturer on diseases of mind and nervous system. Besides these, there are some Professors extraordinary, some assistants and some clinical clerks in the hospital that belong to the teaching department. Many of the medical professors have various titles of science and honor, and are members of numerous scientific bodies in different parts of Europe.

The hospital connected with the medical college has 700 beds, which are usually full, notwithstanding the city only has 52000 inhabitants.

The present hospital building is very ancient in appearance, built in the form of a four-sided block with a central court. It was erected in the twelfth century.

Through the courtesy of the house surgeon, Dr. Joseph Silvestrini, a very intelligent and agreeable gentleman indeed, I was shown through the wards of the hospital.

The floors of the hospital are made from concrete, and having been in use so long are worn an inch or more in depth which causes them to be very rough and uneven in places; and when they are swept considerable dust rises from them which does not seem to add to cleanliness, nor I think conduce to health.

In some of the lower wards wooden floors have been recently introduced. The wards are small on the first floor, but on the second they are too large, being formed from the two wings of the building. Yet in this story the ceiling is about twice the highth of an ordinary room; and about ten feet from the floor projecting from the wall is a gallery extending entirely around the ward for the accommodation of the students.

At the bed-side of each patient was a long sheet of paper, upon which the history of the case was recorded from day to day.

The amphitheatre in the hospital will not hold more than from seventy to a hundred students.

I was introduced to Dr. Vanzetti, Professor of Clinical Surgery, in the ward where he was having a clinic in the presence of about sixty students. The professor, after completing his operation, conducted me to their instrument room, where they had a great variety of surgical instruments, some of which, from their clumsy character, looked very ancient. I was also taken into a room full of plaster casts of surgical cases that had occurrrd in the hospital.

Last year the number of medical students who attended lectures here was 311. The students that I saw were a fine looking, neatly dressed set of young men.

The professors anxiously inquired about medical teaching in Cincinnati, for they seemed acquainted with the reputation our city has as a great medical centre. When told the age, or rather the youthfulness of our city, the number of its inhabitants, and the number of medical students that annually flock to it, they all exclaimed grand, grand, grand! They said they were ready to take off their hats to Americans, to do honor to their great progress.

Notwithstanding the age and reputation of this University, as well as others in the northern part of Italy, and notwithstanding they have furnished some of the greatest scientific men and philosophers the world ever produced, yet education of the masses is much neglected throughout this whole country; not one fourth of the population can read or write.

Padua is also noted for its fine, large, luscious cherries, the most delicious I ever ate, and I think I shall always regret not having eaten another killogramme of them while there.

I was overtaken, while on the way from Lake Como to Milan, with that much dreaded Italian fever, and I must tell you how it acts. It seizes you without previous notice like a regular Italian bandit, and first tries to freeze up your very life's blood; failing in this, it changes its tactics, and tries to burn up every particle of carbon in your body. While you are undergoing this roasting process, you will be more fortunate than I was if you know for several hours whether you are in the crater of Vesuvius or some other hot country. You try to arrest this intense heat by drinking ice water, but the stomach rebels; and not only that, but did you ever see one of those dredging machines at work in the canal or river—well, the upheavel of the stomach is about like that, at indifferent intervals, until the very dregs are all removed, or as long as the boilers are hot and the steam on. After about twenty-four hours of this freezing, roasting, and dredging, your head will feel about as large as a bushel, and quite as empty; and you will feel very anxious to see your mother. It was my good fortune to have my friend Dr. Bryon, of London, near by, who came and cared for me, and removed me to Cadenobbia on Lake Como, where I soon recovered.

I must say of Lake Como and of its scenery that they are the finest in the world. A splendid place to rest and recuperate. Here you have seclusion and sublimity; luxuriant woods and dazzling waters; smiling white villas, surrounded by perfumed citron groves and orange trees; the horizon on the one side dotted with the loftiest Alpine peaks, while on the other it is blended with Italia's richest plains. "A deep vale, shut out by Alpine hills from the rude world, near a clear lake margined by fruits of gold and whispering myrtles; glassing softest skies, cloudless, some with rare and roseate shadows," is where I rested in a hotel "lifting to eternal heaven its marbled walls from out a glossy bower of coolest foliage, musical with birds." And I might add, in the language of the poet, that it is

"Sublime, but neither bleak nor bare,
Nor misty are the mountains there—
Softly sublime—profusely fair;
Up to their summits clothed in green,
And fruitful as the vales between,
They lightly rise,
And scale the skies,
And groves and gardens still abound;
For where no shoot
Could else take root,
The peaks are shelved and terraced round."

Very respectfully yours, A. J. M.

CINCINNATI, July 8th, 1875.

J. A. THACKER, M. D., Editor CINCINNATI MEDICAL NEWS:

DEAR SIR: I fully recognize your right to criticise the management of the Cincinnati Hospital, and will not only be the last person to complain of fair and just criticism, but will endeavor to profit by it. In an editorial, however, in your Monthly of July, 1875, there are statements and conclusions as to my personal and professional conduct that I cannot allow to pass unnoticed. Those statements are mostly untrue, and the conclusions are therefore false. Your article was certainly written in ignorance of the facts, and now that I shall briefly put you in possession of

them, I shall expect your next issue to contain an explicit correction of your statements and conclusions.

First. I was not at any time a member of the advisory committee of the ladies' temperance crusade, and, of course, was not daily urging, nor did I at any time urge or countenance "the ladies on in visiting wicked liquor saloons, and annoying the proprietors with their singing and praying."

Second. I was called to consult with other legal gentlemen in connection with that advisory committee, some time before the arrest of the ladies, and joined with these lawyers in advising that the ladies stop in the course they were then pursuing as illegal and unwarranted, and likely to result in riot and bloodshed. For this service no charges were made or even thought of by the legal gentlemen.

Third. When the ladies were arrested, Mr. W. M. Ramsey and myself were employed by six responsible gentlemen, among whom were the Hon. C. W. Rowland and William F. Thorne, Esq., acting as a committee of defence, to defend the ladies before the police court. We were told by these gentlemen, with some compliments as to our standing as lawyers, that our services were not desired as a gratuity, but that we were expected to charge for them, and they expected to pay us. It was a simple business agreement made in contemplation of services to be performed. After the trial and discharge of the ladies, the same gentlemen asked us to render our bills, which we did. That the ladies, by their own exertions, paid our bills was no fault of ours, nor are we responsible therefor. We were not employed by the ladies, had no charge against them, and rendered no bills to them. Very respectfully, yours, etc., M. B. HAGANS.

IN order that Judge Hagans, late Judge of the Superior Court, may have an "explicit correction" of any misstatements that we may have made respecting him, we print in this issue his letter to us in full. We are always ready to make the *amende honorable* if we have done any one a wrong.

But how much of a wrong did we do the honorable gentleman in our editorial of last month's issue? The point, and the only point, we endeavored to establish was, that there is a marked contrast in the conduct of lawyers and physicians in rendering professional services gratuitously, and, in the way of illustration, alluded to the well known fact that the Hon. Judge Hagans charged the lady crusaders of this city, during the late temperance crusade, when brought before the police judge, *one hundred dollars for defending them.*

The letter of the Judge, it will be perceived, fully corroborates the correctness of our statement. A bill of one hundred dollars was handed to the gentlemen acting for the ladies (husbands and brothers), which the ladies paid out of the proceeds of a fair some time afterwards. If the Hon. C. W. Rowland and Wm. F. Thorne, Esq., promised to pay the bill out of their own pockets, as would be inferred from the Judge's letter, and then declined to do so, they acted very ungentlemanly, very dishonorably; but they promised nothing of the kind. As was understood, they passed it to the ladies, and *these paid it.*

The Judge says he didn't charge the ladies anything for the service of telling them that their course was illegal and likely to result in riot and bloodshed. We do not see why he should. The ladies knew themselves that their proceedings were illegal, and therefore did not need the information, and why should they have been forced to pay for it? That riot and bloodshed was likely to result, was an opinion that was not worth a straw. Such a consequence depended altogether on whether Mayor Johnston would

or would not efficiently protect the ladies by the police; and we do not suppose that the honorable gentleman would claim that his very profound knowledge of Blackstone gave him the slightest clue in the matter.

But the Judge's knowledge of Blackstone should have prevented him from writing this sentence in his letter to us: "Those statements are mostly untrue, and the conclusions therefore false." Instead, he should have written: "In the main, your statements are correct, and your conclusions true; but, in some particulars, not affecting the validity of your conclusions, you have fallen into error from, doubtless, having been misinformed, which please correct in your next issue."—Ed.

Book Notices.

Health in India for British Women, and on the Prevention of Disease in Tropical Climates. By Edward John Tilt, M. D. Late President of the Obstetrical Society of London; Correspondent Fellow of the Royal Academy of Medicine of New York; and of the Obstetrical Society of Philadelphia. Fourth edition. London: J. and A. Churchill, New Burlington St.

The object of this work is to inquire into all that relates to the health of English women who reside in India.

But more especially is it devoted to the effects of India on menstruation, pregnancy, parturition, lactation, and finally, and particularly, the effects of tropical climates in producing uterine disease.

In consequence of Dr. Tilt being a well known author on diseases peculiar to women, and a successful practitioner in those diseases, he has been largely consulted by English women who have lived in India, and suffered from uterine disease; therefore, what the work contains on this subject is highly valuable to all practical gynæcologists, and especially to those residing in the southern part of the United States.

In this little volume the author first shows how India predisposes to other diseases, and the necessity of studying the entire effects of the climate upon the general system, so that uterine pathology may be the more easily comprehended.

The author says on page 62: "Of course English women in India are liable to every kind of disease of the womb; but uterine disease severe enough to render it advisable for patients to return home, I mean more or less acute inflammation of the womb, of which I have met with two varieties in patients sent to me from India. In the least common variety the cervix is alone affected; it is not much enlarged, the mucous membrane covering it is red, and the mouth of the womb is more or less ulcerated and patulous. Generally, the lining membrane of the cervix is in a similar state, etc. I have chiefly met with this form of uterine disease in the unmarried, or in married women who have never had any family.

"I have observed the second and most frequent variety of uterine disease in women who have borne children. In this variety, the cervix is just as I have described, only much larger, more patulous, and often retroverted; but the gravity of the case depends on the body of the womb being implicated. It is often two or three times too large, and, as a rule, I ascribe this increase of size to defective involution. It is not only enlarged, but diseased. Sometimes the softness of the uterine walls, as felt by the finger in the vagina, and the pain caused by pressure, enable me to say that the

substance of the womb is inflamed. Watery or bloody uterine discharge, and the habitual disordered state of menstruation, point to internal metritis."

Chapter fifth is devoted to the prevention and treatment of diseases of women in tropical climates, and contains much valuable information.

Much that is contained in this work will apply to the southern part of the United States, where we have excessive heat and malaria, similar to India, but in a much less intense degree. I can therefore cheerfully recommend the work as invaluable, at least, to large proportion of the profession of our country. A. J. M.

Editorial.

Cincinnati Hospital.—We mentioned in our last issue that, in the reorganization of the staff of the hospital by the trustees, which recently occurred, Dr. B. F. Miller, who had served quite efficiently upon the staff for a number of years, and against whom no charges were made, had been displaced to give way to Dr. W. H. Mussey. It has now come to be known that it was on the programme, in like manner, to dispose of Dr. D. S. Young and appoint Dr. W. W. Dawson in his stead; but Dr. D. would not accept only on condition that he was to be relieved from all service during the spring and summer, and was only to serve during the lecture season of the fall and winter. The trustees, not being willing to accede to these terms, Dr. Young was unmolested in his position, otherwise he would have been summarily dismissed without notice, in the same manner as Dr. Miller.

It will be perceived that the members of the staff of the Cincinnati Hospital hold their positions under the present management on terms of the most degrading character. They are liable at any time to be dismissed without cause and without notice. Dr. B. F. Miller was informed of his displacement by some of the nurses of the hospital when he visited it to attend to his usual duties. The trustees did not regard it worth their while to officially notify him.

It scarcely seems probable that in any other city than in Cincinnati could there be found medical men willing to accept appointments on a medical staff on such terms as the present members of the staff of the Cincinnati Hospital hold theirs. We hope that Dr. Mussey is able to approve to himself his conduct in accepting the place of Dr. Miller, from which the latter had been ejected in a manner insulting to the whole profession; and also that Dr. Dawson, if the trustees had accepted his conditions, could have conscientiously stepped into the position from which Dr. Young would have been degraded. When certain men had been degraded from their places by the trustees of the Presbyterian Hospital, of New York, the *Medical Record* of that city, in an editorial, said: "The profession has a right to feel a deep interest in this matter, as it involves the surrender of reputation, respectability, and individual rights, into the keeping of men who are not willing to acknowledge their worth even if they admit of their existence." * * * The gentlemen who took the four places, owe it to their brethren to state the reasons for their acceptance of the positions, or to resign." Now let some of the moral tone, which some of our medical men have been talking about for so long a time, exhibit itself by some acts. Surely a doctor is not on a level with a demogogue politician, and is not willing to accept place at the cost of the degradation of a brother. The profession of medicine has a dignity to preserve, and this cannot be done

by its members riding one over the other without any regard to any gross injustice that may be inflicted upon brethren.

A Serious Error.—Under this head the *Monthly Microscopical Journal*, of London, prints the following:

A Serious Error.—Dr. Thacker, who is the editor of the Cincinnati Medical News, and who is also a distinguished microscopist, has made a grave mistake in announcing that Messrs. Ross have simply followed Mr. R. B. Tolles, in the manufacture of new glasses. 1st. Messrs. Ross were undoubtedly the first to introduce the new form of objectives which they have now for some years adopted. 2nd. They have certainly not adopted any of Mr. Tolle's ideas. The following statement therefore, which is made by the Cincinnati Medical News, April, 1875, demands correction:

"It seems that since the superiority of R. B. Tolle's, of Boston, new four-system lenses has been demonstrated, the distinguished English makers of objectives are abandoning their old formulas and instituting new ones. At a late meeting of the Royal Microscopical Society, Messrs. Powell and Leland exhibited two glasses on a new formula; one 1-4th, showing the lines of *Amphipleura pellucida*, and the other, 1-8th, showing *Pleurosigma angulatum*,—4000. This object was illuminated by direct light. The effect was to show the interspaces remarkably magnified, and the beads comparatively small; they stood out like minute spheres of pink coral on a white ground.

"The Messrs. Ross also have determined to abandon their old construcition from the 1-2 inch upwards, and adopt one devised by Mr. Wenham. In the new combination, it is stated, a great increase of brilliancy and definition is obtained by dispensing with six surfaces formerly used. The higher powers, from 1-5th upwards, can also be used as immersion lenses by merely adjusting the collar to the mark 'wet,' thus avoiding the cost of extra fronts, and loss of time in changing them.—Ed."

We fail to perceive in the remarks of ours, copied by the M. M. J., that the Messrs Ross are charged with having simply followed Mr. Tolles, of Boston, in the manufacture of their new and justly-celebrated glasses; and so we fail to see that we have any correction to make. Undoubtedly, since the superiority of the new four-system lenses of Mr. Tolles has been demonstrated, the English opticians have felt the necessity of improving their objectives, the Messrs. Ross along with the others; but we have no reason to believe but that their formulas were devised by themselves, and that they are not indebted to Mr. Tolles for them.

Medical Charts.—We received some time ago a number of charts from the author, Dr. Geo. E. Walton, which we should have noticed before, but like a good many things that belong to us they became mislaid.

The charts are for the convenience of physicians desiring to keep memoranda of their cases. Each one occupies a half sheet of letter paper. On one side is a blank space for name of patient, age, occupation, weight, family history, etc., etc. On the other side are ruled spaces for noting daily observations, morning and evening, of temperature, pulse, respiration. At the bottom of this chart are figures displaying the different regions of the body for the purpose of tracing the seat of any morbid action.

The charts will no doubt be found of great convenience. Price of one, five cents; a dozen, fifty cents; one hundred, three dollars.

The Cincinnati Industrial Exposition.—The sixth exposition will

open to the public, Wednesday, September 8, and continue open until October 9. We hope that all of our friends will take advantage of the facilities of travel then presented and will visit our city. The exposition has gained quite a world wide reputation, and of itself is worth a visit. As in previous years, every department in mechanics, art, science, agriculture, horticulture will be represented. The machinery always makes an imposing appearance; in geology, and the various natural sciences there will be a large display of specimens; optical, philosophical, surgical, and medical instruments will be in great profusion. Physicians, scientists, lovers of the useful and beautiful, will be well repaid by a visit to our city during the time mentioned.

Our space will not permit us to give a list of premiums that are offered for displays of articles, that are more or less especially interesting to physicians. For the various electrical apparatuses there are thirty-four premiums offered. For surgical, dental, and optical instruments we count fifteen premiums. Chemistry and pharmacy comes in for forty premiums. But it is not worth while to continue the enumeration. Let all come and see for themselves.

WALNUT STREET HOUSE.—We desire to call the attention of our readers to the advertisement of the Walnut Srreet House. This is strictly a first class hotel, and at the same time the prices are unusually low. Physicians, druggists, and all others will find it an excellent place to stop at when visiting Cincinnati either alone or with their families. The proprietors, Captain F. Y. Batchelor, and Messrs. Chas. Regnier and Geo. W. Keye are courteous and obliging gentlemen.

THE HEALTH LIFT.—The "Health Lift," the advertisement of which appears in the advertising pages of the NEWS, is an instrument by which to obtain exercise without the injurious violence that follows upon the usual gymnastics. It has become very popular in the eastern cities, especially Boston and New York, and is commended by the leading members of the profession of those places.

The instrument is small, made of iron, and, furnished with castors, can be trundled to any part of the room desired. When not in use it can be pushed under a table or in a closet. It has two handles, which can be raised or lowered to any length to suit the individual excercising—these seized, and standing on a small platform of the instrument, the operator *lifts himself* and any additional weight that his strength is able to cope with, from fifty pounds to twelve hundred pounds. While lifting, nearly every muscle is brought into action, and yet there is no violence or any risk of strain.

It is well calculated to develop the muscle, enlarge the capacity of the chest, promote nervous energy, and increase endurance. The public exercise rooms in this city are well patronized by both ladies and gentlemen; for it is equally adapted to one sex as the other.

We think it would conduce much to health if these "Lifts" were introduced into houses, schools, academies, and colleges. There are thousands of persons whose days are being shortened by sedentary habits, to whom they would furnish most healthful exercise, giving relief to dyspepsia, nervous prostration, habitual headaches, and "a thousand and one other ills" which a want of exercise brings about. We would advise physicians to often send some of their ailing patrons *on a lift* of a week or so, or longer, if a public exercise room is convenient, or, if not, to purchase one of the instruments.

THE CINNAMNATI MEDICAL NEWS.

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Original Contributions.

CONTRIBUTION TO THE DOCTRINE OF CANCER

[Concluded from June No., p. 253.]

By Dr. HERMAN MEISSNER, of Leipzic

Extract from Schmidt's Jahrbucher. Translated by J. Trush, M. D.

III. TREATMENT.

The different views entertained by the profession in regard to the nature of cancer, its constitutional or purely local character, have, very naturally, given rise to different methods of treatment. Physical proofs of the existence of a constitutional dyscrasia as the the cause of cancer certainly can not be furnished. Various circumstances, nevertheless, would seem to indicate that this assumption is correct and well founded, for example: the undoubtedly hereditary origin of the disease in many instances; its great obstinacy to treatment, reappearance in situ after removal, even after the lapse of years; the tendency to secondary cancer deposits in remote parts of the body; the cachexia, capable, it is claimed, of causing death quite independently of the local process. All these phenomena, however, can be readily explained in favor of the theory of "the local origin" of cancer. Thus, hereditability is a characteristic which pertains to cancer only to the extent to which it belongs to many other admittedly not constitutional affections, as warts, fatty tumors, atheromatous growths, club foot, premature blanching of the hair, etc. In view of the known independent vitality of the cancer cells, the great facility with which they are detached, the depth to which many of the roots of the growth penetrate among the tissues, in view of all this, the tendency of cancer to reappear at the site of the original tumor, or in its immediate vicinity, is not in the least surprising; neither is it strange to meet with secondary deposits in adjacent lymphatics, or in remote parts of the body, seeing that the process of embolism by the blood-vessels and lymphatics fully explains such phenomena.

The theory that cancer is a constitutional disease, seems to find support in the discoveries made in recent times by Cohnheim and v. Recklinghausen in regard to the migratory character of the white blood-corpuscles; these investigators having found that the collections of round granular cells, observed at the periphery of cancerous growths during the early periods of development, are possessed of all the physical characters of the white blood-corpuscle, and are, in all probability, nothing else than emigrated white corpuscles. Thus it would appear that cancer actually had its source of

origin in the blood. This emigration of white corpuscles however is witnessed in all inflammatory processes, after injuries, etc., and in order that transformation of the corpuscles into cancer cells shall take place, some special influence must be at work. The "local" cancer theory is further supported by the fact that, structure (of the malignant growth) exerts a marked influence in regard to malignancy, those forms being most dangerous which by virtue of their peculiar organization are most prone to yield up some of their constituent parts (cells) to be carried by the circulating fluids to all parts of the body, and thus giving rise to general infection and numerous secondary deposits. In all forms of cancer in which the lymphatics terminate with open mouths in the cancer alveoli, secondary deposits are of frequent occurrence. In epithelioma such deposits are rare, and occur mainly in those instances where the primary growth is located upon soft tissues subject to a great deal of motion.

The sarcoma, as previously remarked, rarely invades the lymphatic glands, unless complicated with widely diffused melanosis; and of the carcinomata, the softer and more rapidly growing forms are most liable to give rise to secondary deposits in remote parts of the system; an "investing" membrane about the growth greatly protects the organism against general infection. The existence of a cachexia, finally, capable of causing death independently of the local affection and the deterioration of the system arising from this, is altogether imaginary. Were such actually the case, we should necessarily be forced to regard the local growth as a repository of cancer poison for all parts of the organism, and its development as an exceedingly desirable event and extirpation of such tumors consequently not to be thought of, all hypothesis standing in direct opposition to actual facts. The manifestations witnessed in cases of so-called cancer cachexia, possess nothing of a specific character, they being present in various other affections attended with disintegration of tissue and frequent hemorrhages. The local affection, therefore, in all cases, is the cause of the death of the individual; it is so, either because it has involved some important organ, or because of the exhausting discharges and the infection of the general system with putrescent matter from the local growth which is undergoing disintegration. This being true, it follows as a logical sequence that the local affection ought to be early and radically removed. Even if the disease were constitutional, the removal of a loathsome local production, if free from any material risk, could only prove advantageous to the patient; but, being purely local, as cancer in its early stages of development undoubtedly is, thorough removal at this time is, obviously, of most vital importance. The mode of extirpation is the same as with other morbid growths; during the early periods of development the knife is to be preferred for the reason that, complete extirpation is thus most readily accomplished; partial extirpation being at all times—some rare instances excepted—useless, if not positively injurious. After the operation is completed the wound should be well washed off with a solution of chloride of zinc, or of carbolic acid, to insure destruction of accidentally detached and scattered cancer cells. In cases where the immediate danger of the knife operation exceeds the benefits to be anticipated, various caustics must take the place of the knife. Very little is to be expected from internal medication, notwithstanding it must be conceded that whatever influence a given medicinal agent exerts upon the general organism, that influence, to a certain extent, will also operate upon the local disease; we can not, however, conceive of a remedy which would so concentrate its effects upon the local ailment, as to arrest an abnormal and excessive proliferation of cells. Local inunctions, fomentations, etc., are equally useless, and the action of certain

physical agents, as cold and pressure on the development and re-absorption of these morbid growths, has not yet been sufficiently investigated to admit of expressing a definite opinion as regards their utility."

Dr. Eugine Boekel, of Strassburg, expresses similar views respecting indications for the treatment of cancer, and the most appropriate time for extirpation.

Assuming that cancer, in the majority of instances at least, is the result of local influences, the propriety of operative interference must be conceded; the removal should take place as early as possible, certainly before secondary deposits have been produced. Such a course usually inspires the patient with hope, his sufferings having been removed and his general condition greatly improved, and even if not permanently cured, life certainly is prolonged. (In mammary cancer on the average six months according to Paget.) In one of Dr. Boekel's cases, (an encephaloid of the mammary gland,) the disease did not return until after the lapse of twenty-nine years, death taking place nine years later in the eighty-sixth year of life. As a rule relapses appear much earlier, usually within a few months or at the most within two or three years, in some instances almost immediately after the operation. This is most likely to happen in youthful persons, during the period of active growth, such persons being strongly predisposed to this disease. In some instances unobserved cancer deposits in other parts, or organs of the body, must be looked upon as causes of the recurrence of the disease; adjacent lymphatic glands, for example, though not larger than a pea, may nevertheless be completely infiltrated with cancer cells. Another cause of relapses is imperfect extirpation of the primary tumor, this being either of very irregular shape, or having "roots" (processes) which extend deeply into the tissues, and especially along the course of the lymphatics. Still another cause of renewed growth are isolated cancer cells, detached during the operation and scattered upon the surface of the wound; being endowed with independent vitality, proliferation proceeds immediately, and a new growth is soon produced. All these circumstances therefore must receive due consideration, if the dangers of relapse are to be diminished. Manifestly operations for the removal of primary cancerous growths, in order to be permanently successful, should be performed early, and must be executed with the utmost care and thoroughness. The operation is contraindicated in all those cases where malignant growths have made their appearance simultaneously in various parts of the body, the entire organism being evidently infected; in these cases removal can, at most, afford temporary relief from intense suffering, and perhaps postpone for a brief period the fatal termination.

A number of cases have been reported within the past few years by French physicians which seem to attest the curability of cancer. Chaumet, of Bordeaux, during a practice of upwards of twenty-four years, claims to have observed some fifteen-hundred cases of malignant growths. One fourth of these were mammary cancers, next in frequency came cancers of the lips and face, then those of the uterus, testicles and penis. Dr. C. observed that cancer of the penis usually made its first appearance upon the prepuce, or glans penis, compelling the patient to seek medical advice early; operations for removal are consequently performed at a time when the disease is yet strictly local, and hence the result is uniformly a permanent cure. Cancer of the testicle on the other hand does not offer the same prospects of a radical cure, mainly because it is not observed until considerable progress has been made, when complete removal may no longer be possible. The same holds good in cases of mammary cancer: permanent cures being rare again chiefly by reason of late extirpation. Of four-hun-

dred cases upon whom the operation of extirpation had been practiced, Chaumet witnessed temporary relief in nearly all of them; in five-sixths of the number the disease returned within from one to two years, in one-sixth only did the removal effect a permanent cure.

Removal is also indicated in cases of relapse, according to Dr. Anandale, just so long as the disease remains localized, and the morbid growth can be removed; this not infrequently is the case in cancer of the lips and of the mammary gland. Dr. Bell entertains little hope of being able, by repeated operations, to prolong life very materially, admits however that much suffering is thus often averted and the patient rendered comparatively comfortable, until death, from internal cancer deposits, takes place.

The electrolytic treatment of malignant tumors, employed with considerable success by Dr. Althans, as early as 1867, has since been strongly recommended by various physicians, but more especially by Dr. Neftel, of New York. Neftel proclaims himself a decided supporter of the theories of Waldeyer respecting the origin of malignant growths, believing it to be strictly local. He endeavors to fortify his position with cases from his practice; partly by such, in whom, without obvious predisposition, the disease had evidently been developed by traumatic causes, and in part by others afflicted with cancer and successfully treated by electrolysis.

That in many cases a certain hereditary predisposition to cancer exists Dr. Neftel does not deny, but maintains that this hereditary tendency does not consist in transmitted cancer germs, but in a faulty organization of the tissues, or of certain organs; thus he noticed, in schirrhus for instance, a marked tendency to sclerosis of the arterioles. This condition was strongly expressed in a patient afflicted with cancer of the tongue; the individual in question, a man fifty-six years of age, entirely healthy, except that some eight years previously he had suffered from an obstinate ulcer of the tongue, in April, 1871, was again seized with ulceration of the tongue, which this time speedily assumed a cancerous aspect, spreading rapidly in all possible directions, and proving fatal within a very brief space of time. Neftel is of opinion that mechanical injuries, to which the mammary glands are not infrequently subjected, often act as the exciting cause in the development of cancer of these organs, and Willigk holds similar views in reference to the influence of gall stones on the development of cancer in the liver.

According to Neftel, also, imperfect extirpation frequently hastens the fatal issues, inasmuch as the remaining portions of the growth, the elements of which had previously been in a state of latency, are now apt to enter upon a stage of rapid proliferation. This circumstance has given rise to the erroneous belief, especially defended by John Simon, that a cancerous tumor represented a depurating organ in the body, and hence ought not to be removed. The application of caustics often seems to have a similar effect, *i. e.* hasten the growth of the neoplasm. Electrolysis, on the other hand, rightly employed, serves not merely as a palliative, but as a curative agent, particularly in cases where the disease is not constitutional.

The effects of electrolysis are not limited to the tumor merely, but extend far beyond its boundries to apparently healthy, but in reality already infected parts, as shown by the disintegrative changes which have taken place in the tissues; even this is not the limit of the electrolytic influence, for it is well known that currents of electricity are conducted to remote parts of the body, and to whatever parts they extend there they induce molecular changes. This latter, or "constitutional" effect of electrolysis occasions important changes in the protoplasm, without causing its direct destruction, a fact already pointed out by Kuehne, Engelman, Golubew and

others. These changes are visible in microscopic sections, first as a mere opalescence; finally, a state of complete disorganization of the cancer cells is witnessed. The cells of the normal tissues, being possessed of greater vitality and resistence, maintain their integrity much longer, but stronger currents will destroy both the diseased and the healthy structures, the effect remaining however confined mainly to the site of application; week currents, on the other hand, penetrate into the depths of the morbid structures, without producing a local caustic effect. Neftel therefore employs the stronger current by means of the needles at the commencement of the treatment, and the weaker, by means of a small cathode plate, as after treatment, the plate being applied over the same locality where previously the needles had been introduced. For tumors of moderate size and slow growth, which have not yet invaded all the adjacent tissues, N. employs a strong current, from a battery of thirty-five to forty elements, using a cathode needle and an anode plate, and allowing the current to pass for twenty or thirty minutes. This operation is repeated three or four times, at intervals of a like number of days. Subsequently weaker currents, from batteries of four, six, or eight elements, are passed through the tumor daily for fifteen or thirty minutes. This treatment is continued for weeks and even months. When a tumor is of very large size several needles are introduced and the current allowed to pass during from ten or twenty minutes: one after the other of the needles are then removed and reinserted at some other point, until all parts of the growth have been thoroughly permeated. If the growth is still larger, of the medallary variety, rapidly growing, extensively ulcerated, or threatening important vessels or organs, its vitality is destroyed at once, if possible at one sitting. This is accomplished by arming the anode also with a needle, and inserting it into the center of the tumor; three or four cathode needles are then entered at the base of the tumor close together, and the current permitted to pass for fifteen or twenty minutes, when they are removed and reinserted a little beyond the first point of application, and so forth until the entire periphery of the tumor is undermined. Within an hour or two after the operation, the tumor turns livid or black, and after the lapse of from seven to ten days is thrown off, without any marked inflammatory reaction and without extension of the gangrene beyond the line of insertion of the cathode needles. The healthily granulating surface thus produced must be acted upon by week currents for several months to come. Less favorable are the results of electrolysis, if the operator is compelled to allow longer intervals of time to pass between operations. Neftel even believes that under such circumstances the growth is not only not reduced in size, but grows more rapidly; the electrical current seeming to act as a powerful stimulant rather than as a resolvent.

The views of the Drs. Bruns, Sr. and Jr., that the effects of electrolysis depend solely on its caustic action, and were confined to the immediate vicinity of the needles, are pronounced erroneous by Neftel, he having repeatedly witnessed the disappearance of smaller tumors under electric treatment, without gangrene or suppuration, the growth simply becoming softer and gradually diminishing in size; a transparent colerless fluid, of alkaline reaction, was seen to ooze out from the needle punctures, which fluid was believed to be nothing more nor less than liquified cancer cells.

The treatment of ulcerating neoplasms by means of gastric juice from dogs, as recommended by Lussana, has been tried by Drs. Arthur Menzel, Mancini, V. d'Arpem and others, with varying results. Of two cases treated by Menzel with gastric juice, to which a little hydrochloric acid had been added, very marked improvement took place in one of them; before

however the cure could be completed, an intercurrent disease terminated the patient's life. In the other case an arrest of growth seemed to be the only result of several week's treatment of this kind. Dr. Menzel observed in this connection that when fresh gastric juice (from dogs) was applied to ulcerating tumors, a yellowish gray deposit was formed upon the surface of the ulcer, and that the offensive odors, usually emanating from such ulcerations, speedily disappeared; from these facts he is led to infer that gastric juice will digest decaying shreads of animal tissues upon the surface of the ulcer, and perhaps also destroy the feebly vegetating superficial stratum of the neoplasm, but is convinced that it does not attack the deeper and more vascular portions of the growth, and is consequently totally incapable of completely removing any of these morbid productions. As a useful dressing, however, Dr. M. can recommend it.

The experience of Dr. Mancini in the treatment of ulcerating cancers with gastric juice from dogs is of a similar nature; he likewise failed to cure any of his cases with the remedy in question, but like Menzel found it useful as a dressing, especially in cases where the growth was so located that the fluid could be continuously applied.

Dr. V. d'Arpem, on the other hand, obtained highly gratifying results with gastric juice in a case of cancer of the uterus and rectum. The patient had already been treated with various other remedies, and was constantly growing worse; the gastric juice treatment was then commenced, Dr. A. injecting into the rectum a mixture of gastric juice (from dogs,) a little glycerine and water. The first injection gave rise to very alarming symptoms, as syncope, great precordial oppression, spasm of the bladder, bloody offensive discharges from the bowels, tenesmus, etc. (The rectal and versical irritation was greatly relieved by a lavement of oil of sweet almonds.) After each injection of the gastric juice mixture, numerous pieces of cancer substance were discharged, and after twenty days of this treatment the patient was discharged cured. The uterus was now much smaller and much more mobile, the os uteri was normal; the rectum clear of cancerous deposit, but constricted by a ring-like cicatrix, otherwise normal.

Subcutaneous injections of nitrate of silver, as recommended by Prof. Thiersch, of Leipzic, have more recently been employed by Dr. Ad. Hermann, of Pest, in two cases with good results. In the one, a case of cancer of the mammary gland, Dr. H. injected at the first sitting about one-tenth grain of nitrate of silver of the strength of (1 : 2000) one grain of the salt to 2000 grains of water; this was followed immediately by injections of a solution of common salt, (1 : 1000) in all about one-twelfth of a grain. The pain from this operation was severe and protracted, and gave rise to considerable constitutional disturbance, fever, cough, difficulty of breathing which lasted fully three weeks, so that the second series of injections could not be made until after the lapse of four weeks from the first sitting. The operation was then repeated, but this time local anesthesia with ether spray was first induced, and after the operation subcutaneous injections of morphine were made to alleviate the patient's sufferings. The reaction which followed was much less violent than after the first operation, so much so that ten days later a third series of injections could be made. Seven weeks after the commencement of this treatment the patient was discharged; the mammary tumor had now almost entirely disappeared, some of the axillary glands, however, were still enlarged and hard, though much smaller than at the outset of the treatment. The second case, one of sarcoma of the umbilicus, was treated in a similar manner and to all appearance cured. In both these cases the general improvement was very marked. This method of treatment therefore is likely to prove a valuable

addition to our therapeutic means for the treatment of cancer, valuable, even though it should prove impotent to prevent the ultimate fatal result.

Subcutaneous injections of chromic acid also have been employed successfully in the treatment of cancer. A case of (evidently) cancer of the neck was treated in this manner by Dr. Daniel Leasure. The solution employed was of the strength of one part of the acid to five parts of water. Of this sixty drops were injected in four different directions from one external puncture. On the second and fourth days the injections were repeated. By the fifth day some inflammatory reaction sprang up, which was however soon subdued by poultices. A month later the central portion of the growth was decidedly softened, and, shortly after the injection had again been repeated, a large abscess opened spontaneously. A month and a half later the growth had disappeared and the abscess closed, a cicatrix marking its former location. In two other similar cases Dr. L. obtained equally favorable results, so also in a case of epithelioma of the face. This remedy therefore likewise is deserving of attention and further investigation.

Chloride of zinc and carbolic acid, in various forms and concentrations, have also been used with success in the treatment of cancer. Dr. John Wood of King's college hospital, employs a solution of chloride of zinc (1 : 16) as a dressing after extirpation of malignant tumors. C. F. Maunder and others, used the chloride of zinc in the form of a paste and in substance, in cases where the morbid growth cannot be extirpated with the knife with encouraging results.

Arsenic is another remedy which has been used successfully in the treatment of cancer. Two cases of medallary cancer having been treated with apparent success, (were cured of primary trouble, no relapse six months afterwards), by Dr. Crombie, ofthe London cancer hospital. Dr. C. used a paste composed of eight parts of arsenious acid and four parts of mucilage of gum arabic.

Dr. Peter Hood strongly recommends the internal use of lime in the treatment of cancer; two cases having come under his observation where the internal use of the white portion of burnt oyster shells, finely pulverized, had effected a complete cure in one of them, and very nearly so in the other; this patient suddenly dying from an intercurrent disease. The action of lime in these cases Hood, in common with Spencer Wells, believes to consist in a deposit of lime in, and consequent atheromatous degeneration of the coats of the arterial vessels of the tumor, whereby its nutrition is impaired and atrophy results. Under a long continued internal use of lime, all the arteries of the body, Hood believes, would finally fall a prey to this calcareous degeneration, which he says, first manifests itself in the cornea, as arcus senilis. In like manner, according to Hood, is the action of chloride of lime, successfully employed by Dr. McClintock in bleeding uterine fibroids, to be explained.

Chlorate of potassa in the hands of Dr. Burow, Sr., has repeatedly given satisfactory results in cases of ulcerating cancers, and is therefore warmly recommended by this gentleman. Dr. B. applies it in the form of powder and in crystal; the powder, being the milder application, should be used whenever the parts are acutely sensitive, and the crystal as soon as this sensitiveness has been somewhat blunted.

TREATMENT OF DELIRIUM TREMENS.—Dr. C. K. Kitchen recommends a generous diet, full doses of fluid extract of conium during the day, and during the evening hydrate of chloral with tincture of hyoscyamus, repeated till sleep is secured.

ON DEAF-MUTISM AND THE METHOD OF EDUCATING THE DEAF AND DUMB.

By LAURENCE TURNBULL, M. D. Physician to the department of the Eye and Ear of Howard Hospital, Philadelphia.

Absolute deafness is far more of a hindrance in acquiring an education than blindness. The lot of the uneducated and ignorant deaf-mute is sad indeed; cut off from his fellow-men, with nothing but his animal passions and appetites, he is almost allied to the lower order of the brute creation. It is not to be wondered at, that during the early times, even among the so-called civilized and refined nation ot Egypt, Greece, and in the great city of Rome, the condition of this class was truly deplorable. The old idea that speech was essential to reason, prevented attempts at their instruction, and they were not permitted to become members of any religious denomination. Even when they committed outrages against law and order, or after the commission of the crime of murder, they were not allowed to act as witnesses in their own defence.

As early as the fifteenth century, some faint effort was made to teach these unfortunates by a celebrated Benedictine monk,* who, it is stated, taught two deaf-mutes, sons of a Castilian nobleman, this, no doubt, at an immense cost of time and mony. But it was to the sixteenth century that the great honor is due of being the year of jubilee to the deaf and dumb. And to the Abbe de L' Epee this great gift was given to teach deaf-mutes by a symbolic language, so that they might know good from evil, and give to them aspirations after true knowledge, fitting them for a happy home here and a better world above. In this, the good abbe showed true Christian genius, devoting his whole life to giving and teaching them a language so that they could communicate with each other and with those they loved.

Another devoted man, the Abbe Sicard, took up the clue already given, and adopted the sign language for their instruction, and enlarged and improved it, reducing it to a system. The lives of two such devoted Christian men aroused public attention to the wants of deaf-mutes, and slowly but surely vanquished the prejudices that had existed against them even among professing Christians.

Gradually, schools were founded, and capable teachers spent their lives in instructing the deaf-mutes. Germany was not long after France in this philanthropic labor, for 1760 Samuel Heinicke, a Saxon by birth, developed the "Artificial Method," now termed German, in contra-distinction to what was already known, to the honor of France, as the "French System," or finger alphabet and artificial signs and gestures. The principal aim of Heinicke was to cultivate whatever remained of speech by developing all its power, which exists in all (save a very few). The training of the eye to watch the motion of the lips requires the cultivaton of all the powers of observation and imitation. In the early stage of this system artificial signs are absolutely necessary, but when these have been acquiredt hey are to be merely used as a ladder to reach the higher region, where the finger alphabet and other artificial signs are excluded.

There ought to be a commiasioner in every State to examine and classify the deaf and dumb, where all who are found to possess any degree of hear-

* Teaching articulation to deaf-mutes was first practised by Pedro Ponce de Leon, who died in 1584, and was first described by Juan Pabbo Bonet, in a dissertation published in 1620; then by John Wallis, in an appendix to his English Grammar, entitled "Tractatus Grammatico-physicus de Loquela;" and shortly after by Joliana Conrad Amman, in his "Suidus Soqueus,." Amsterdam, 1692, and "Dissertatis de Loquela," Amsterdam, 1700.

ing or any remnant of speech (having lost hearing after learning to talk), or any who manifest a marked facility in vocal utterances, should be assigned to the articulating schools, while all others should be placed in the older establishments, where the language of signs is made the basis of instruction.

In a recent convention of Teachers of Visible Speech, to which the writer was invited, an interesting address was made by Mr. Wm. Martin Chamberlain, of Marblehead (a sem-mute), which shows the advantages of lip-reading and articulation. We can only give an abstract. He addressed the audiance by word of mouth, and althongh his speech was somewhat defective, he was perfectly understood by all present. He stated that he lost his hearing at five years of age, and would, as a natural sequence, have lost his speech also, had it not been his good fortune to have parents who appreciated its value, and used persistent efforts to have him make use of his vocal organs. He was educated at Hartfort, where he entered as a pupil about the time when articulation was beginning to attract attention in America, and his ability to articulate indued his teachers to encourage him to recite his lessons orally instead of by signs. He stood before the convention withont having heard a sound for thirty-five years, a living example of what can be done for a semi-mute by mere persistent effort on the part of friends, without any special instruction.

In an admirable letter from B. St. John Ackers, of England, in the American Annals of the Deaf and Dumb, April, 1874, he gives his conclusions, after examining the system all over the world, in the interest of a deaf and dumb daughter. "*Our conclusion are in faver of the 'German System' for all who have once heard, for most of the semi-deaf; and a large majority of the toto congenital.* For the remainder, I cannot imagine any system more appropriate than the 'French,' only recording our opinion in favor of fewer signs, and increased use of dactylology, and writing in the more advanced pupils." What struck him most was the contrast in the French and German system in the love of home. Those taught under the French system care comparatively little for the "holidays," for home and relations. Why? Because the institution is their home, the principal, matron, and teachers, their parents and relations. "Let them be taught by the 'German System,' and this will enable them to think in the written idiom of the language of their conntry; will enable them to hold conversation with hearing persons, to understand much that is spoken to them, and will make them figuratively less deaf and truly less dumb, indeed not dumb at all."

It will be seen by the above quotation that he is of the same opinion as we are, as lookers on, and not personally affected, giving an impartial opinion of what we consider the best method of instructing the deaf-mute.

We do not find fault with what has been done, but rather rejoice that thousands of deaf-mutes have received the advantage of an education, and that there is also a national college at Washington where more advanced studies can be pursued, and young deaf-mutes are graduated with a stnding for scholarship not inferior to that achieved by the graduates of other colleges. This college bears to other institutions for the deaf and dumb the same relation that colleges for hearing and speaking persons bear to primary schools and academies. The charge for board and tuition in college is only one hundred and fifty dollars for the academic year. Congress, however, makes provision for the free admission of residents of the District of Columbia who have not the means of supporting themselves, and for those whose fathers are in the military or naval service of the United States. In the Columbia Institution, which is a branch of this college, there is a primary department, and also an instructor in articulation. Until recently

the plan adopted in England was the French system, but now a change has taken place, and schools employing the so-called German system are to be found in London, one at 12 Fitzroy Square, and the other at old Kent Road. The first of these institutions is termed the "Association for the oral instruction of the deaf and dumb." This system is now taught by Mr. Van Praugh, assisted by three ladies; it was founded in 1872 with four pupils; now, 1874, thirty-six are in attendance, and it is not a charity but a pay school. The second is a true charity, and was founded in 1792, for the support and education of the deaf and dumb children of the poor. According to Fry's London charities the year's receipts last reported were £10,040, in round numbers $50,200; the number of persons benefited last year, 1872, was two hundred and eighty-eight. It has also a branch at Margate seashore, incorporated in 1862. This old and deserving metropolitan charity (the first of its kind in Great Britain) has up to the present time (1873) received under fostering protection 3900 deaf and dumb children from all parts of the United Kingdom. With very few exceptions these poor children come of indigent parentage; they have, therefore, been boarded, clothed, and specially educated for an average period of five years, each child, at the sole cost of this charity. Moreover, when their educational term has expired, the arm of assistance has been still further extended to them; and of 1360 former inmates who have been taught, and acquired a knowledge of various useful occupations, 354 deaf and dumb children are now (1873) under instruction at the town and sea-side establishment. About 260 former pupils are now serving terms of apprenticeship, the premiums (which are required in England) for which have been found by the committee. There is also a Jewish deaf and dumb home, founded in 1867, at 44 Burton Crescent, W. C., to support and train deaf-mute Jewish children of both sexes to speak and to read from the lips of others, also to give general instruction to other deaf-mute children. Miss Hull has also a school in London, where the deaf and dumb children are taught by Mr. Bell's method of visible speech. The following is from the writer's account in *Medical and Surgical Reporter*, 1872.

"Visible speech does not prevent the employment of any means that are or have been used by others. Imitation and mechanical aids are used whenever the pupil can be assisted by them; but when these fail, visible speech comes in to the assistance of the pupil.

"This system gives the pupil a knowledge of the concealed parts of the mouth, and of the movements of such parts, so that he is enabled to gain conscious control over them.

"The writing of any sounds that the pupils may utter, serves to interest them in the practice of elements and combinations, which gives them great power over their organs of speech, and obviates the necessity of telling that the sound is wrong, if it is not the one the teacher wishes to obtain.

"It is our practice to write all sounds in the visible speech symbols, but practice most those that are essential in English speech. The symbolizing of odd sounds also leads the pupils to think about and study the parts of the mouth that produce them.

"I inclose to you some lines upon 'Visible Speech,' which were written by one of our pupils, a young lady who lost her hearing entirely at the age of eight years.

"VISIBLE SPEECH.

The ear has caught the forms of sound
Upon the walls of speech;
But all in vain till now the eye
Has sought their clue to reach.

Now, with a mirror newly hung,
  Those walls of speech are graced;
And in that mirror every sound
  Can find its image traced.

The blended tone which gives to thought
  Its outward voice and sign,
Revealed alike to ear and eye,
  With clearest lustre shine.
This to the child of silence brings
  A gift unknown before;
Unlocks the long-closed gates of speech,
  Opes wider learning's door.

The thought of speech, to him denied,
  Has often filled his heart;
And, like a sword of ice, has sent
  Its chill through every part.
Before him now the forms of sound
  In true reflection lie;
For, though mist shrouds his ear, it sheds
  No dimness o'er his eye.

This gift, like sunlight, shall reveal
  What shadows else had marred;
To him whose skill has bade it shine,
  'Twill prove its own reward.
In power and clearness may it grow,
  Till greater still is found
The power it wields, the light it sheds
  Upon the world of sound.

April, 1874. A. C. J."

We must not forget, in doing credit to those who have done so much for the deaf and dumb, the name of Rev. Thomas H. Gallaudet, D. D., whose last resting place at Hartford we visited with feelings of admiration for his distinguished scholarship, and for his true Christian Charity and patience. He taught the interesting daughter of Dr. Coggswell, of Hartford, who was deaf, dumb, and blind, and ultimately founded the American Asylum at Hartford. This truly good and great man proceeded to Europe in 1807, and became the pupil of the Abbe Sicard; after remaining for some time he returned to the United States accompanied by M. Clerc, one of the favorite pupils of Sicard, who organized the Pennsylvania Institution for the deaf and dumb at Philadelphia, and subsequently returned to Hartford, there remaining until his death.

In their labors these two good men were united, and also in their renown, as each received for their valuable services from the directors a silver pitcher and salver. In death they were not divided, their tombs standing side by side in the ground of the asylum, visited by loving and devoted pupils from all parts of this broad land. Both Rev. Dr. Gallaudet, and his son, Dr. Edward M. Gallaudet, the Preident of the deaf-mute college at Washington, have been warm friends of the sign language, and we availed ourselves in our work, of the report of his first visit to Europe in October, 1867. We again give his conclusions, after another visit in 1872: "While he would by no means claim that the system in general use throughout the United States is free from defects in its practical workings, he is convinced

that the principle on which it rests is sound, and that greater benefits can be secured to the mass of deaf-mutes through its agency, than by any system which undertakes to make articulation its basis; assuming to teach *all deaf-mutes* to speak, and discarding the language of signs."

In the seven years since that visit, a great change has taken place in the various deaf and dumb institutions in the United States, and not only are these several institutions solely devoted to articulation, but all of the principal ones have teachers in articulation.

I trust that my object will be accomplished: First, in interesting physicians in preventing deaf-mutism, by careful and conscientious treatment of the diseases which cause it, namely, scarlet fever, cerebro-spinal meningitis, obstructed Eustachian tubes, measles, and syphilis. Secondly, in inducing a certain amount of study of the two main systems of instruction of which the writer has endeavored to give an impartial account, so that the physician can recommend to his patient, relatives, or friends the proper mode of instruction; also to see that no improperly treated case of diphtheria or tonsilitis is allowed to be the cause of the deafness followed by dumbness. It is also surprising how often Eustachian tubes, obstructed from cold, are a cause of extreme deafness, and how long this may exist, and yet with preserving effort the child may ultimately recover its hearing, and with it speech, if it has ever been able to talk. Numerous cases of this form of disease have come under the writer's notice. What is to be done, is the perserving use of astringents applied to the nasal cavity, fauces, enlarged tonsils and swollen mucous membrane, with the use of tonics of iron, etc. Another important agency is the use of Politzer's air douche, to keep the tubes free from mucus.

No one can know the distress of having a child a deaf-mute, until one of his own household is afflicted in this way, as is graphically depicted in the following question: "The last of my family, father, mother, and near relations gone. After many years of married life, a child was born, a daughter. What my feelings of joy were it is not difficult to imagine; but alas! all was soon changed. At three months old a fever came, and our hope, our darling, after lingering between life and death, was spared, but not the same. No, in time we found her hearing was gone. Oh! the agony of mind we suffered, words can scarcely depict. She had the benefit of the best medical and surgical skill; but alas, both were powerless."

CANCER.

Read before the Memphis Microscopical Society by S. P. Cutter, M. D

A tumor, supposed to be medullary cancer, taken from the inner canthus of a little girl four years old, was handed me for microscopic investigation. The eye of that side had been eaten away so as to require removal several months previously. The socket healed up, though recently the disease reappeared at the former side, and grew rapidly, accompanied with severe hemorrhages necessitating removal to avoid fatal results. The tumor weighed some two ounces; white, soft in texture, having an oily aspect, with impacted blood on inner surface. In appearance it resembled brain matter very much, partaking of the encephaloid variety of cancer. There was no loss of blood in the operation, or subsequently, until its renewal since.

MICROSCOPIC APPEARANCES.

When fresh, before hardening in alcohol, specimens had different appearances, the chief mass being composed of white corpuscles, or cells resembling true pus, or white blood corpuscles, *leucocytes*, all matted together in rows or lineal contact, held or bound together by a stroma of connective tissue fibres interspersed, in some places more dense than others. These corpuscles were full of granules or neucleoli distinct.

The next most prominent feature was oil globules in great quantities, of variable sizes, intermixed all through the mass. The granules, I suppose, Mr. Beale would call germinal matter, giving the mass of molecules rather a dilapidated appearance, as though just ready to break up or disintegrate into a semi-fluid mass.

There were other cells varying in size and shape, some of them neucleated, and might be termed heterologous as described by one writer; the main mass of cells might be termed homologous, or homogeneous. There were smooth tapering tubes occasionly running through the mass, which I suppose were arteries, they tapered to a point.

There were no capillary vessels or veins visible. These tubes were not like true arteries, as they tapered more, and did not branch at all. The lack of veins to return the blood from the tumor was no doubt the cause of hemorrhage. The outer covering or skin membrane was something very different in structure from the mass, being made up of a number of layers of large rounded or ovoid cells, or laminæ, about 1-200th of an inch in diameter, very thin and perfectly homogeneous, no granules or neuclei. They were lapped over each other without any great regularity. These laminæ were not recognizable while the tumor was in the soft state, not until it had been in alcohol for several days. The other cell structures were damaged after three or four days in alcohol, owing to coagulation of thin albumen; for some two days they were not sensibly altered, and might be cut and mounted with facility.

The laminated cell covering resembled very much areolar tissue, and some specimens of vegetable cells, as those of the celery plant and many others. In some places on this membrane there were fibrous stroma, some of which had distinct striæ like muscular fibre.

In these veins, respecting *leucocytes*, I am not giving the ideas of Classen, as given in the April number of the MEDICAL NEWS, 1875, on the doctrine of Waldeyer, Virchow, Robin or any one else.

The cancer referred to above, may have had its germ or other origin, as Waldeyer thinks, in the altered epithelium of the part as a starting point only, and the stroma of connective tissue mentioned may be accounted for in the connective tissue theory of transformation, advanced by Virchow and others. Both tissues may play an important part in this case, and other similar ones so far as I know—I only give ideas suggested by microscopic appearances.

Whether or not the disease was local at first, there is no doubt in my mind as to its present constitutional character, involving the blood at least, and no local treatment can be of any permanent benefit, if in fact any treatment at all can be. If reached at all it must be reached through the blood by alterations of such a character as to prevent the formation of these *leucocytes* or such tendency. They must poison the blood in a similar way to *pyohæmia*.

EXTRACTS FROM BRITISH AND FOREIGN JOURNALS.

From *Practitioner*.

Esmarch's Bloodless Method.—A good paper on this subject, by Dr. Henry Sands, is contained in the *New York Medical Journal.* Though perhaps familiar to many of our readers, we shall reproduce the details as given by Dr. Sands for the benefit of those who may not have had the opportunity of seeing the method practiced. The bandages, he says, should be composed of elastic webbing, or, what is better, of simple sheet-rubber, which can be more readily cleaned than the webbing when it has become soiled The bandages should be about two and a half inches wide, and it is convenient to be provided with several of them, each three yards in length, rather than to employ one long bandage. As a substitute for the tourniquet some surgeons use a piece of the same bandage; others employ a solid rubber cord or rope about a quarter of an inch in diameter, while Esmarch himself recommends for this purpose a piece of tubing made of non-vulcanized rubber, which is softer and more yielding than the other varieties. The application of the bandage in ordinary cases is quite simple. It is put on with moderate compressing force, and carried from the fingers or toes to any desired height. The constricting cord or tube which is to take the place of the tourniquet is then wound two or three times round the limb immediately above the upper edge of the bandage, and made fast either by a knot or by a hook and chain, or any similar contrivance. The bandage is then removed to expose the parts for operation. Some experience is needful to apply the bandage with the proper degree of force. Often it is employed too firmly, and this mistake is pretty sure to be made by beginners. On the other hand, it may be applied too loosely, and Dr. Sands has several times seen it put on with just sufficient force to allow venous congestion of the parts, with consequent hemorrhage during the operation. The same remark applies with equal truth to the use of the constricting cord, which, if applied too loosely, will cause venous engorgement, and if too tightly, may do serious damage to the nerves, and probably also to the blood-vessels of the limb. The skin, when exposed after the removal of the bandage, is seen to be blanched and anæmic, and when the deeper tissues are cut into, they are found to be nearly or quite bloodless. The vessels, both arterial and venous, are almost absolutely empty, so that an amputation of the thigh can be performed without the loss of more than five or ten drops of blood. As soon as the constricting band is removed, the large vessels having been previously secured, the blood returns to the part with considerable force, and a pretty free oozing commonly takes place. This is usually quickly checked by the use of cold water, aided, if necessary, by gentle pressure. With slight modification in the adaptation of the apparatus, the method may be applied to amputation at the hip or the shoulder-joint. The advantages claimed for the bloodless method are, that it is sometimes the direct means of saving life by economizing the vital fluid; that it renders the healing process more certain and speedy; that it diminishes the frequency of septicæmia and pyæmia; that it enables the surgeon to accomplish deep and difficult dissections, the tissues not being obscured by blood; that it permits the easy extraction of foreign bodies and the thorough examination of diseased bones and joints. The objections made to its use are, that the pressure impairs the vitality of the parts and causes them in many instances to slough; that it sometimes affects injuriously the nerve-trunks, giving rise to paralysis both of sensation and motion;

that it may induce plethora of the internal organs; and lastly, that in cases of gangrene or unhealthy suppuration, poisonous fluids may be passed into the blood-vessels or into the healthy tissues by the bandage, and thus occasion septicæmia or pyæmia. Dr. Sands proceeds to give the details of 143 cases of operation, of which sixty-three were amputations. Of these last, ten cases terminated fatally, or 22.7 per cent. Four died from pyæmia, three from exhaustion or shock, one from spreading gangrene, one from erysipelas, and one from hemorrhage. Dr. Sands' conclusions are highly favorable to Esmarch's plan, though he thinks the method will not prevent pyæmia, whilst care should be taken when dissections are made that large vessels are not divided.—*New York Medical Journal*, No. 1, 1875.

PERIOSITIS OF THE TEMPORAL BONE COMPLICATING PURULENT OTITIS.—Dr. Duplay observes that when, in the course of an acute or chronic purulent otitis, pain, swelling, and redness of the peri-auricular and mastoid region supervene, we at once suspect that a grave complication has arisen, and we fear that suppuration of the mastoid cells has occurred. Under appropriate treatment, these symptoms may all gradually disappear, and resolution take place, or the inflammation may proceed to suppuration, from which, after the spontaneous or artificial evacuation of the matter from the mastoid cells, the patient may make a good recovery. The cases to which he desires to draw attention are those of external periostitis over the mastoid process, which he thinks is not sufficiently known. In his experience it supervenes almost exclusively in the course of purulent catarrh of the tympanum, with more or less extensive destruction of the membrana tympani and implication of the meatus auditorius osseus, or part corresponding to it in the new-born infant. The treatment should consist in making a very free opening as soon as the presence of matter can be satisfactorily determined.—*Archives Generales de Medecine*, May, 1875.

THE FLUIDS CONTAINED IN HYDROCELE OF THE TUNICA VAGINALIS.—Dr. Mehu divides pathological collections of fluid into two groups: *serous liquids*, which correspond to those of acute pleurisy, hydrothorax, ascites, hydrocele of the tunica vaginalis, certain fluid collections in the subcutaneous cellular tissue resulting from contusions, hydrarthrosis of the knee-joint, and hygroma. These fluids are of a yellowish tint in general, and are all rich in albuminous matters. The second group comprises the *seroid liquids*, as the cephalo-rachidian fluid, the contents of hydatid cysts, encysted hydrocele of the cord and of the epididymis. These differ *inter se* more than the former group. Some are sharply distinguished by containing some special morphological element, as echinococci or spermatozoa; they are usually colorless or slightly milky, without fibrin or albumen, or with but traces of them. The constituents of the liquids of the *tunica vaginalis* are identical with those of the serum of the blood, though the solid residue after evaporation is somewhat greater. They are usually limpid, even when they contain a large proportion of albumen. They filter easily, owing to the absence of fibrin. He twice, however, observed them to coagulate after removal from the body. They occasionally contain cholesterin. The liquids of hydrocele of the tunica vaginalis are never colorless, but have always a more or less amber or orange, deepening into icteric green tint; but the liquids of encysted hydrocele of the epididymis are neither yellow nor green, but present the aspect of water to which a few drops of milk have been added. They contain myriads of spermatozoa. They are alkaline to test paper. Dr. Mehu gives the details of the analyses he has made on a large number of cases of the fluids contained

in both the above varieties of hydrocele.—*Archives Generales de Medecine*, May, 1875.

THE COURSE OF THE TEMPERATURE IN DEFERVESCENCE.—Dr. Finlayson remarks that the observation of the temperature in cases in actual practice affords charts that are widely different from those that are given in books, taken from typical cases, and that it is difficult to draw conclusions from them; and he proceeds to consider an ideal case in which the practitioner is anxiously watching the course of a fibrile disease when a crisis is expected, or when defervescence may seem to have begun, and to consider what fallacies may present themselves. In the first place, so long as the febrile temperature persists the disease continues; but a fall of the temperature is not necessarily a favorable prognosis. In the case, for example, of basilar meningitis, the temperature is seldom very much elevated, and a marked diminution from the previous heights of a *tubercular fever* may sometimes be seen when the cerebral symptoms begin to assume a special gravity; so that while a too exclusive reliance on the indications of the thermometer might lead to a favorable opinion being given in regard to the actual condition of the patient, the depression of temperature might really be due to the failure of the vital powers. In pneumonia, again, although the usual course of a fatal case is to attain a maximum before the termination in death, there may be exceptionally a low temperature preceding this event, either continuing to the end or giving way to a terminal exacerbation. A depression of the temperature to the degree of collapse may be associated with severe intestinal hemorrhage in enteric fever, or possibly even with perforation of the bowel, and this depression may perhaps be the earliest of such accidents. A great depression may likewise follow other forms of bleeding, remedial or otherwise, and it is sometimes associated with the act of vomiting, or with a profuse discharge from the bowels. A collapse temperature may, however, be of no evil omen, and may constitute one of those critical perturbations which not unfrequently pave the way for a genuine crisis within twenty-four or forty-eight hours. The best means of avoiding being led into such errors are: First, by paying careful attention to the state of the pulse and the general condition of the patient; and second, by acquiring familiarity with the usual course and the common deviations of the temperature in special diseases. The sudden rise and fall of the temperature in an ague, or in the course of a few days in relapsing fever, may bear a superficial resemblance to the alternations in the pyrexia of pyæmia without possessing anything of the gravity of this fatal disease. Hence a fall of temperature immediately after observations have been commenced must be interpreted with caution. Dr. Finlayson gives instances of the differences in the rapidity of the fall of temperature in the crisis and lysis of various affections, it being usually sudden in the former, and slower and more steady in the latter. The temperature of convalescents is unstable, and when relapses or complications are feared, the evening observations should be continued.—*Glasgow Medical Journal*, April, 1875.

SOME FACTS CONCERNING PNEUMONIA.—Dr. W. B. Rodman has recently had the opportunity of treating, in the Kentucky State Prison Hospital, a large number of cases of pneumonia, which he attributes to the bad ventilation of the "cell-house," in which seven hundred men sleep in cells that only contain about three hundred cubic feet of air each. The mortality was six in seventy-five cases, or eight per cent., but since using a particular plan of treatment he has had no death in twenty-three cases. The treatment adopted in ordinary cases was as follows: On the patient

presenting himself he was thoroughly bathed with warm water and a mustard emetic given. The bowels, if constipated, were moved with some saline, generally magnes. sulph. and potass. bitart. The whole of the affected lung or lungs, as the case might be, was enveloped in a turpentine stupe, which was kept on till the second stage began. Warm moist applications were now made, as of woollen cloths wrung out of hot mustard and water. As soon as the bowels were opened, carbonate of ammonia in fifteen-grain doses was given in mucilage of acacia every three hours, with three grains of quinine with each dose. From the beginning the diet was most liberal, consisting of beaf-tea, milk, eggs, etc. As soon as the second stage had set in whisky was added to the above, sometimes as much as a pint and a half or a quart being administered in the twenty-four hours. The carbonate of ammonia and quinine were kept up till resolution was fully established. Opium was rarely given, especially in the later stages. When the bronchia were tolerably free, ten grains of Dover's powder were given at night. Blisters were not often used, but when the dullness was persistent they often proved very serviceable. Such was the treatment of ordinary cases. When the temperature was as high as 104° or 105° F., occasionally 106.5° (with ultimate recovery), quinine was given in large doses to obtain its antipyretic effect (ten and fifteen grains). When this was insufficient, the wet pack was used to assist in abating the fever. Niemeyer's plan of cold-water treatmeut was tried, but with unsatisfactory results. Towards the later stages if the pulse became weak and frequent (showing a weakened action of the heart from exhaustion), digitalis was used with good effect. Dr. Rodman frequently found it beneficial, when well-marked typhoid symptoms were present, to administer a solution of potassium chlorate and of the perchloride of iron tincture in combination with the above, the doses being five grs. of potass. chlorate and m. 30 of tr. fer. sesquichl. every four hours. Dr. Rodman insists particularly on the value of carbonate of ammonia used from the very beginning of the attack, though he is unable to explain how it acts.—*Medical Record*, No. 227, 1875.

Serpiginous and Phagedænic Ulceration, and Quinine.—Mr. Croft calls attention to the value of quinine in these forms of disease. In one case, of which full details are given, where serpiginous ulcers of syphilitic origin had long existed, iodide of potassium had been prescribed at various times in full doses. Mercurials had also been given internally in the form of the biniodide. Calomel vapor baths and topical fumigation had severally been employed without effect. Twice fuming nitric acid was applied without benefit. At length quinine in eight-grain doses was combined with scruple doses of iodide of potassium, and from this time a remarkably rapid cure commenced. In twenty-eight days he was able to walk out of the hospital to go to a convalescent hospital. No relapse took place. The eight-grain doses caused singing in the ears about one week after he had commenced to take the medicine; but it was not discontinued on that account. Mr. Croft gives two remarkable cases of phagedænic ulceration, one of which was syphilitic and the other non-syphilitic, in which quinine proved extremely useful.—*St. Thomas's Hospital Reports*, vol. v., 1875.

Report on Cases of Pneumonia.—Dr. Peacock, of St. Thomas's Hospital, gives an interesting analysis of one hundred cases of idiopathic pneumonia which he has treated in public practice. Of these, thirty were treated at the Royal Free Hospital, and seventy at St. Thomas's; eighty-one of these cases were men, and nineteen women, which he shows corresponds closely with the results of other observers. The greater tendency to

pneumonia in men is simply due to their exposure to the exciting causes of the disease. Pneumonia chiefly occurs in the periods of youth and middle age, when the system is most vigorous and the liability to exposure the greatest. Most of Dr. Peacock's patients followed laborious out-door occupations. The numbers were greatest in spring and summer, pointing to the production of the disease by sudden alternations of temperature and chills occurring in warm weather, when the functions of the skin are active, rather than by exposure to severe though more continuous cold. The duration of illness before the admission was in general only a few days, and the disease usually commenced with rigors or chills, followed by heat and pain, cough and expectoration; sometimes it supervened on ordinary catarrh. The right side was affected in 23, the left in 25, and both sides in 36 cases, the remainder not being named. The complications were, among others, hæmoptysis, delirium and otitis, capillary bronchitis and commencing phthisis, scorbutus, pericarditis, endocarditis, phlebitis, rheumatism and delirium, anasarca, jaundice, curvature of the spine, diarrhea, herpetic eruptions. The temperature, though high, rarely exceeded 104° Fahr. It ranged from 99.3 to 104.5 and the highest temperature occurred in the first week. The mean period of residence in the hospital was at St. Thomas's, 35.5 days; in the Royal Free, 25.3 days. The deaths in all the cases were 11.7 per cent., or one death in 8.5 cases. In regard to treatment, in some, limited bleeding or cuppings were practised, and small doses of calomel, or grey powder, with opium or Dover's powder, were given internally. In others the treatment was rather of an eliminant and expectant character. Bicarbonate of potash, acetate of ammonia, and nitric ether were given, and with these were combined expectorants and anodynes, ipecacuanha, opium, or hyoscyamus. In both series of cases, stimulants—ammonia, brandy, or wine—were ordered when the patient's strength began to fail, and blisters, sinapisms, or poultices were applied externally.—*St. Thomas's Hospital Reports*, vol. v. 1875.

A Pathognomonic Symptom of the Moribund Condition.—Dr. John Shrady, in a paper upon the "moribund condition," recently read before the Yorkville Medical Association, maintained that the earliest and therefore most valuable symptom of approaching death was the up and down movement of the trachea; that the inferior laryngeal nerve, owing to a partial paralysis or impairment of its function, is concerned in the production of this phenomenon, and sounds the first note of alarm that the medulla oblongata is invaded. This tracheal symptom is particularly prominent in fatal cases of uræmic convulsions, opium poisoning, apoplexy, and delirium tremens; the air then ceases to stimulate the glottis, the respiratory movements are impaired, and the lungs can no longer decarbonise the blood. In pneumonia, Dr. Shrady thinks this symptom is of special value, anticipating as it does alarming changes in pulse and temperature, while in phthisis he has known it to be a precursor of death three weeks in advance. Its presence or absence in membranous croup should, in his opinion, be an important element in the prognosis of a given case of tracheotomy.—*Medical Record*, No. 230, 1875.

General Treatment of Chronic Nervous Diseases.—Prof. Benedikt remarks that in addition to electrical treatment, thermic and hydrotherapeutic treatment play an important part in the cure of these affections. Acute inflammation, producing trophic disturbances by exudation, requires when they have passed into the chronic stage, the application of heat in those forms which promote absorption, as warm and even hot baths. Chronic and progressive forms of inflammation, with hypertrophy of con-

nective tissue, require hydrotherapeutic means. In chronic neuritis, as seen in muscular atrophy, tabes, etc., on the other hand, warm baths are injurious, and are at least incapable of arresting the progress of these diseases. In the stationary condition, however, they may prove serviceable. Hot baths are indicated in the treatment of the sequelæ of the acute and subacute inflammation of the central nervous system and of the membranes, providing they exhibit no tendency to progress; but they are contra-indicated when the neuralgia, anæsthesia, and paralysis increases, or where the brain and spinal cord are congested. If given at all, the intervals between them should be considerable, and the patient should be put to bed at once, so that he is exposed as little to the air as possible. In peripheral neuralgia, which Benedikt regards as always depending upon neuritis and its consequences, the decision as to whether thermo- or hydro-therapeutic measures should be adopted is much more important than in central neuralgia; for in many instances the peripheral neuralgia originate in rheumatic conditions, in which the application of cold would act injuriously. In peripheral rheumatism, vapor baths, with electricity and judicious exercise, constitute the most advantageous method of treatment. Cases of hemorrhage in the central nervous system require special precaution, for these are not, in the majority of cases, a local disease, but the expression of widespread atheromatous or varicose changes in the brain. In some of these cases all active treatment is contra-indicated; but in most cases the use of warm but not of hot baths is serviceable, providing there are no indications of motorial irritation, as contractions and convulsions. The presence of contractions, however, is not in itself a contra-indication to thermic treatment; and although they are rarely cured, yet they may be improved. Thermic and electrical treatment together should only be undertaken with great precaution, and sometimes not until six months from the date of the attack. Hydrotherapeutic procedures are only of service in relatively recent cases, and only when thermic methods of cure are of no advantage. Little is known in regard to the treatment of psychosis by the application of heat. The application of cooling measures in the mode adopted in febrile cases is very satisfactory in acute nymphomania, and may even preserve life. In chronic cases of dementia paralytica the methodical application of the cold water cure proves at least of temporary benefit; but the results of this plan of treatment are best in melancholia attonita. In all these forms of disease the thermic procedure constitutes a powerful agency for good, and the same may be said of the group of symptoms produced by neoplastic formations and idiopathic epilepsy. The cold water cure proves serviceable in hypochondriacal cases in consequence of its tonic action. In spermatorrhæa and impotence, in addition to the electric, thermic treatment is indicated, especially with powerful douches, though it must be used with care, since it sometimes proves injurious. Specialists have a high opinion of the effect of douches applied to the back of the head. Among local thermic measures, Chapman's application of heat and cold by tubes of india-rubber to the spinal column deserves special praise, the principle of which is that the temperature of the extremities and of the head stands in relation to the congested or anæmic condition of certain regions of the spinal cord. As a rule, no extreme temperature need be applied. Among the means of promoting resorption, electricity and warmth occupy a high position, and to them may be added iodine and quicksilver, which, applied coincidently, often effect remarkable cures, as is especially seen in cases of neuro-retinitis. Neither iodine nor mercury, however, are of much service in the chronic progressive forms of inflammation of the central nervous system, though

they are particularly useful in the recent forms after hemorrhages and in neoplasms. No distinction need be drawn as to whether the neoplastic formation is of a syphilitic or non-syphilitic nature. Narcotics and nervines are useful, and morphia and chloral as anæsthetics. In chronic nervous disease, both of these last should be avoided as far as possible, since the system soon becomes habituated to their use. When cerebral disturbances of the circulation are present, chloral is a very dangerous remedy. Atropine and belladonna are among the most valuable of the nervines, especially in spastic conditions. Amyl nitrite may best be applied as an odorous drug, mingled with double its weight of ol. fœniculi, in asthmatic and steno-cardiac cases, in epileptic faintness accompanied by pallor, and in migraine also, when they commence with paleness of the face. Bromide of potassium lowers the reflex excitability of the nervous system, and is therefore particularly useful in epilepsy. It is also a calmative in states of excitation, when not too intense, in sleeplessness not caused by pain, as in young children, and in melancholic states. It often acts well in neuralgic conditions, but large doses are required. It may be advantageously combined with iron. Nitrate of silver is especially useful in inflammatory conditions of the central nervous system and in epilepsy, but must not be pushed too far. Zinc preparations are serviceable in spastic conditions and in hysteria. Muscular gymnastics play an important part in the treatment of anæsthesia of the joints, muscles, and tendons after chills. Benedikt does not go quite so far as Griesinger in interdicting smoking, but acknowledges it is harmful in excess. The food, in conditions of nervous disease arising from irritation, should be mild; hence has arisen the milk cure and the cures effected on exclusively vegetable diet. The dry cure is especially adapted for gastric diseases, as in dilatation of the stomach. Lastly, changes of air and scene and mental and moral influences are very important means of cure.—*Medicinish Chirurgische Rundschau*, Feb. 1875.

Contributions to the Pathology of Diphtheria.—Dr. Jacobi does not regard croup and diphtheria as independent diseases, but considers that only such differences exist between them as usually prevail between the sporadic and epidemic forms of the same disease. The membrane is an essentially epithelial product, and the peculiar granular amorphous material considered by Oertel and others to be the essential element of the disease is believed by Jacobi to consist of detritus and fat molecules, which are the products of the degeneration of the epithelial cells. He does not attribute much importance to the bacteria said to be present. The anatomical characters and peculiarities of the part affected have, he thinks, much to do with the more or less deep penetration of the disease into the subjacent tissue and the relative difficulty of its cure. The parts covered with pavement epithelium are most likely to be attacked with diphtheritic inflammation. Hence the tonsils and surface of the vocal cords are especially liable to be attacked.—*American Journal of Obstetrics*, Feb. 1875.

Treatment of Purpura Hæmorrhagica by Hypodermic Injections of Ergotine.—Dr. Angelo Cianciosi has obtained excellent results from hypodermic injections of ergotine in a case of purpura hæmorrhagica. The patient was a child of six years of age, of good constitution, who had up to that time never had any illness, but had occasionally suffered from gastro-intestinal disturbance. The parents were perfectly healthy. One evening this child was suddenly attacked with intense headache and fever. An hour afterwards free hemorrhage took place from the nose and mouth. The hemorrhage recurred four or five times in the course of the night, lasting ten or twelve minutes on each occasion. The loss of blood con-

tinued on the following morning. Spots the size of the head of a pin and of a bean appeared on the mucous membrane of the mouth, and others more confluent and of various sizes on the trunk and limbs. The spots did raise the skin and did not disappear on pressure; they formed ecchymotic patches on the left shoulder which resembled a bruise. The cardiac pulsations became very feeble, the strength diminished, and it became requisite to apply some remedy to arrest the repeated hemorrhage. With this object in view, gallic acid in large doses was prescribed, and the hemorrhage soon stopped; but five or six hours afterwards it recurred with great violence, the patient becoming quickly greatly depressed. Under these circumstances Dr. Cianciosi decided to try the effects of hypodermic injections of ergotine, with an interval of an hour and a half between each. The first was made in the deltoid region, the second in the shoulder. After the third the hemorrhage was arrested and did not reappear, and recovery soon took place.—*L'Independente,* March 1875.

THERAPEUTICAL EFFECTS OF OXYGEN.—M. Tamin-Despalle, in a paper read before the Academie des Sciences, states that on the 18th April, about 2 P. M., M. L. was attacked with severe cerebral congestion. He fell, and on recovering himself found that the whole of the right half of the body was paralyzed. The pulse was 82; the face was livid, and the stomach contained a considerable quantity of food. He had breakfasted about half an hour previously. M. Tamin-Despalle thought he ought not to bleed, to apply leeches, nor to administer an emetic. He ordered inhalations of pure oxygen. After the first few inspirations M. L. declared that he felt better, and the power of motion and sensibility returned in the paralyzed side. At 6 P. M. some shivering occurred with an abundant discharge of urine and strong eructations. At 7 P. M., having consumed in all about eight quarts of pure oxygen, he was well.—*Gazette Medicale de Paris,* 1875, p. 229.

DIAGNOSIS AND TREATMENT OF NEURALGIA.—V. Pitha calls attention to the great frequency of neuralgia, which he attributes to the increase of morbid excitability of the nervous system of the whole of the present generation. Neuralgia occurs at all ages, in both sexes and in every condition of life, especially in those of a nervous temperament. Hereditary predisposition can often be demonstrated. The proximate causes are often strains of the body, chills, injuries. V. Pitha himself has suffered for two years from the most severe neuralgia, in consequence of an accidental wound in an operation, and his account of his own case contains many points of interest. In particular he dwells upon the vagaries of the imagination in this affection, and states that he was perfectly convinced he had a stone in the bladder, the irritation of the projecting spiculæ as well as the blows of the stone against the mucous lining of the viscus being distinctly felt; and he was only satisfied of the incorrectness of his opinion after the bladder had been carefully searched with a sound. From that moment all the sensations vanished. From observations on himself and others, he believes the subcutaneous injection of morphia to be the most satisfactory mode of administering it, since it operates quickly, and the narcosis is slight compared with the great diminution of pain that is effected; moreover, it may be frequently repeated without injurious effects. The smallest effective doses should be commenced with, and these should only be increased when absolutely requisite. He gives a caution against employing morphia in those who have disease of the heart, as it sometimes produces in them deadly pallor, cold sweats, etc. When the toxic influence of morphia is manifested, he recommends energetic walking in the open air, washing of the skin with

vinegar, clysters of strong coffee, and, in extreme cases, artificial respiration. As a remedy preventing the unpleasant after-effects of morphia on the stomach and intestinal canal, V. Pitha recommends hydrochlorate of quinine, or a minute proportion (100th of a grain) of atropin may be added to the injection fluid.—*Allgemeine Wiener Med. Zeitung*, 1875, No. 1.

TREATMENT OF FOREIGN BODIES IN THE ŒSOPHAGUS.—Krishaber in a case where a patient was suffering from the presence of a foreign body in the œsophagus, directed him to drink a large quantity of water. He then introduced a long whalebone sound armed with a dry sponge into the stomach, where he allowed it to remain till it had greatly increased in size by imbibition. He then slowly withdrew it, and thus swept the œsophagus from below upwards. A portion of bone was by this means withdrawn. M. Dudlay, in commenting upon the case, observed that it would be difficult to fill the stomach with water if the patient could not swallow, and that if the sponge swelled too much its withdrawal would be painful.—*Seane de la Soc. de Chirurgie*, and *Centralblatt fur die Chirurgie*, No. 16, 1875.

ERGOTINE IN CROUPOUS PNEUMONIA —The well-known contractile influence of ergot upon the vessels—shown by the anæmia of the invisible mucous membranes, led Dr. Wycisk (*Allg. Med. Central Zeitung*) to employ it in six cases of croupous pneumonia, and the results were very favorable. In one such case, with profuse serous and albuminous expectoration, the latter ceased entirely within two hours after the administration of the ergot of rye in powder, and the coarse rattling rales is both lungs gave way to the fine crepitation heard in the early stages of the disease. This effect lasted for two days, and on a second and even third return of the expectoration the ergot was administered with the same good results. None of the other five cases of pneumonia in which the ergot was employed terminated fatally, no sequela occurred in any; the effect of the ergot in all was to diminish the amount of the excudation and consequently the expectoration. The doctor, however, would not advise the use of ergot in large infiltrations, in emphysema, in cases of rupture of cerebral vessels, or in exhausted and decrepit individuals, as it might in such cases prove hazardous.—*New Remedies*, vol. iv. No. 2, p. 103.

DEPRIVATION OF FAT IN WASTING DISEASES OF CHILDREN.

During the past few months it has happened to the writer to have had to treat three cases of a certain form of wasting disease of infants, in which the employment of a simple line of treatment has been attended with success. Although none of the different means employed are original, but have been previously recommended separately, yet it is deemed useful to recount them, and to make known how that by combining these resources an efficient method of treatment may possibly be commanded.

It is not intended to particularize the different cases, but simply to state their general features. All three were infants under the age of six months. Two of them when seen were very much emaciated, and one not so extremely so, yet its emaciation up to the time of treatment was progressive. Persistent and most troublesome vomiting, alternating or concomitant with diarrhea, denoted the severe irritation of the alimentary canal; while the progressive and extreme emaciation showed great defect in the nutritive functions. Naturally infants in this state get very fretful. Their

shrivelled expression of countenance is that of a miniature aged person, haggard and most pitiable and distressing to look upon. On pinching slightly the loose and wrinkled skin, it is felt to be thinner than natural, and the deposit of fat in the subcutaneous cellular tissue which gives plumpness and rotundity of feature to the well-nourished child, is found to be wanting, so that the skin simply covers the puny muscular development and the bones. It is this simple want of fat in the tissues which marks the type and class of cases—by no means infrequent—in which the inunction of oil, hereafter to be recommended, is attended with gratifying success.

Of the great importance of fat in the economy of nutrition, it is scarcely necessary to speak. Let us, however, very briefly summarize the teachings of physiology on this head: 1. Fatty matter exists in the blood and is highly nutritive. 2. It is generally distributed throughout the tissues, scarcely any tissue being altogether destitute of fat. 3. Fat is always present in newly-forming tissues and newly-forming cells, and is essential to nuclear and cell growth. 4. The healthy action of the skin is maintained by the secretion of fatty matters in the sebaceous glands. 5. The hepatic function employs a certain amount of fat, and fat exists in other secretions besides the bile. 6. Fat is a heat forming substance, and contributes to animal energy. 7. Phosphorized fat is a remarkable constituent of nerve substance.

Of all these facts and teachings, that which assigns to fat its share of work in building up the tissues, and in being essential to cellular and nuclear development is, perhaps, the most important in its bearings on the malnutrition of infants. The rapidity of cell formation which takes place in the infant makes a demand for fat. If the supply of fat be cut off, as it is when an irritable stomach rejects the maternal pabulum, and when a continuous diarrhea carries off in an imperfectly digested state, the small quantity of milk which the stomach may possibly have retained, and which is hurried through that part of the intestinal canal where the fatty matters are digested. Hence the deprivation of fat in a condition like this, and the resulting progressive emaciation.

Called upon to treat a case of this kind, the practitioner would rationally set about the rectification of these disturbances by seeking to assuage the irritability of the stomach, to control the diarrhea, and to promote the assimilation of fat. These three distinct objects may be attained by the following means:—

1. The irritability of the stomach may be lessened, and stomach digestion promoted, by administering to the infant about four times a day, a few minutes before it is about to suckle, small doses of bicarbonate and phosphate of soda. In doses of from one to five grains, the phosphate of soda alone, or combined with a little alkaline carbonate, proves a most efficient agent, and it seems to contribute specially to nutrition. It is reasonable to suppose that it assists in the phosphorization of fat and in helping to make bone and nerve tissue.

2. The diarrhea may be treated (as it was in these cases) by oxide of zinc in one, two, or three-grain doses, with a minute quantity of the compound powder of ipecacuanha added, should the diarrhea persist after a few doses of simple zinc oxide. Over and above its astringent effect, the tonic properties of the zinc constitute part of its value. The Dover's powder not only serves as a convenient preparation for giving opium in small doses, but it stimulates the defective skin, lessens irritability, and promotes rest and quietness which are essential to nutrition.

3. The repletion and assimilation of fat may best be promoted by the inunction of oil. The inunction of fat or anointing with oil is a practice

of great antiquity; but the revival of its employment in modern times, as a means of supplying fat to the blood and tissues by means of absorption through the skin—a practice now guided by a knowledge of its *modus operandi*—is one of the many valuable recent contributions to practical medicine. The whole surface of the abdomen may be directed to be rubbed with fine olive oil two or three times a day, and also the back and limbs in extreme cases, and to be swathed in an oiled cloth after the process of rubbing. Active absorption, stimulated by the gentle friction, then goes on during the rest of the time; and the watchful practitioner will soon begin to perceive its effects in the arrest of the progressing emaciation, and in a slow but gradually increasing rate of improvement.

The writer is disposed to attach great importance to the employment of oil in this manner as most essentially contributing to improved nutrition. Clinical experience bears out the theoretical considerations that may be deduced from physiological teaching. All the cases got well in a comparatively short time, and one of the attenuated babies is now a most remarkably fat and heavy child. The treatment, which in this particular case was kept up longer than was found to be necessary in the other cases, seems to have made a lasting impression upon the child's nutritive powers. —*Ed. Canada Lancet.*

EXTRACTS FROM DR. QUINN'S HEALTH REPORT.

SCHOOL HYGIENE.

Inquiries into the dangers of the school-room have lately engaged the particular attention of sanitarians. Experience of physicians in private practice, as well as the observations of sanitary officers, shows that much injury to both mental and physical vigor is often caused by the construction and regulations of educational institutions.

It not unfrequently happens that the brightest and most successful student at college figures less brilliantly in subsequent intellectual pursuits than the more ordinary scholar. Why? Because in one the physical strength and mental faculties have been prematurely expended in badly ventilated and over-crowded rooms, unreasonable tasks, and continuous, persevering study; the other has recovered from the lethargy engendered in the school-room, by the influence of open air exercise, and has taxed his mind with his tasks without extraordinary effort. The former ranks high, and it may be graduates at the head of his class; the latter occupies a less enviable position as a student and graduates with less honor. Both enter literary pursuits; the first with faded impressions of his many acquirements, like a person passing through a crowded thoroughfare, having indistinct recollection of the faces he encounters, without the ability to identify many afterward with any degree of certainty; the other with his acquired knowledge, however little, indelibly engraven upon the memory, as one passing a few individuals only, on a route of travel, whom he could readily recognize on a subsequent meeting.

Aside from the tax upon the mind, the effect upon the bodily health of children in crowded rooms, compelled to breathe during the long hours of the day without proper intervals of recreation, the exhalations from the lungs and bodies of those around them, can not be otherwise than injurious. Reference to mortuary reports will show that consumption ranks among the most prominent causes of death in the cities of this country. Indeed, in the absence of epidemics, this has been the principal cause of

death in our own city; and it has been thought that, aside from hereditary predisposition, "one of the most prolific sources of consumption is rebreathed air."

Danger in the school-room may arise from different causes: 1st, the construction of the rooms with regard to light and ventilation; 2d, carelessness or inattention to ventilating where proper provisions have been made; 3d, the mode of heating; 4th, the construction of desks and seats which may encourage unnatural distortions of the body; 5th, overcrowded rooms; 6th, unduly protracted hours of study; 7th, unreasonable tasks; 8th, the incentives to emulation which take no cognizance of the difference in the mental capacity of students, and which, while they encourage overtaxation of mind and body in the brighter scholars, so discourages the less talented as to weaken their ambition, not only to excel, but also to acquire.

Well lighted and ventilated rooms; proper heating; comfortable seats and desks; non-crowding of scholars; sufficient intervals for mental relaxation and physical exercise; adaptation of tasks and discipline to the average child; genuine study without artificial stimulus, are the means to make educated men and women without detriment to physical health and strength.

So enamored with our common school system is the general public, that it has become a very delicate subject to criticise it, however impartially; but these remarks apply equally to what are known as parochial schools, and to private academies. In comparatively few of them is the proper regard paid to school hygiene. And this fact, however unpalatable, can not be too strongly impressed upon the minds of teachers, school trustees, and parents.

SOCIAL EVIL.

Among the sources of danger to health must be ranked brothels. These are not only dangerous to the health of some of the present generation, but entail disease, misery, and premature death upon beings still unborn.

The subject engaged the attention of the Board of Health as early as 1868, when an enumeration of the houses of ill-fame was made. A bill was also prepared by the Board about that time, and forwarded to the Legislature, for the better regulation of the evil. No action, however, was taken on the proposed law. In June and July of the following year an inspeetion and re-enumeration of houses of prostitution was directed and the result presented in the health report for 1869-70. From that time until about the beginning of the present year, when another inspection and enumeration was ordered by the Board, no other interference with these houses by the sanitary officers was attempted. The result of this inspection and enumeration was not made public, as it was thought no possible good and much harm might follow its publicity. Soon after this an ordinance was introduced into the City Council for the regulation of the "social evil," but failed in its passage.

How to deal with the "social evil" has been a problem which has puzzled moralists and civil authorities. The toleration of the evil under special regulations, or the licensing of houses of ill-fame, has been tried by municipal governments and met with the approbation even of moralists; but the reports of the results of such experiments have been very different.

The only argument I could ever conceive in favor of the legal recognition of the evil, is the possible protection of unborn infants, and the encouragement of healthy, vigorous constitutions for coming generations. Prostitution has been regarded as a crime in all civilized ages and nations, and as a crime only should it be considered. If the crime brings its own

punishment, it should arouse little sympathy for, and form no just cause of complaint from, the culpable parties. But while this is true, efforts should be made to prevent the spread of a loathsome disease, the taints of which will descend to the innocent children, and children's children of the guilty. But can this be done by the licensing or regulation of brothels? I think not. Without entering upon a full discussion of the subject, I believe the opposite has been established by the experiments which have been made. This may be because all efforts in that direction have considered only one sex as likely to spread the contamination, and been made to apply to that sex alone. If these houses are to be regulated at all, not only the inmates but the visitors and patrons should be subjected to the same surveillance. If a record be kept of houses of ill-fame, and the real or assumed names of their occupants, keep also a record of the names, occupations, and residences of the male visitors; and if the one record is to be open to public inspection, let also the other be.

The true method of viewing this subject is to regard the evil as a great wrong, a crime against the individual, a crime against society, a crime against coming generations of men and women, and as such aim at its entire suppression. It is no argument in favor of its recognition or toleration, much less its indirect encouragement by law, to say that it is impossible to suppress it, and that it should therefore be regulated. The same might be said in regard to murder, theft, and other crimes. Because murder has been committed in all ages and will be in all coming time, is no reason why the law should prescribe under what circumstances and in what manner murder may be committed.

If the evil can not be entirely suppressed, it would seem possible to lessen the extent both of the crime and its physical consequences. The prevention of "street walking," or the practice of abandoned women plying their vocation in the public thoroughfares, and enticing youth and others into their homes of iniquity, could surely be accomplished. This would save many a one who, but for this mode of advertising the evil, might lead a virtuous life from moral ruin. And if a law were enacted requiring, under heavy penalties, every physician to promptly report all venereal cases coming under his treatment, that they might be forced into hospitals for care until the danger of contamination was past, it might afford more protection to unborn children than periodical examinations of the inmates of houses of ill-fame.

In conclusion, I desire to renew my expression of thanks for the uniform support in the discharge of my duties, given to me by your honorable Board, as well as for the ready co-operation extended by other departments of the municipal government.

THE CRIME OF "BURKING."

On the 29th of November, 1827, an old man by the name of Donald died in West Port, one of the purlieus of Edinburg. He lodged with an Irishman named William Hare, and died owing him four pounds. His creditor saw but one way of reimbursing himself, and that was by disposing of the old man's body to the doctors. Hare found a ready accomplice in William Burke, another Irishman, and also one of his lodgers. The body was removed from the coffin, and a bag of tanner's bark substituted for it. The lid was screwed down and the little funeral went off as usual. The same evening Hare and Burke stealthily repaired to the university,

and, meeting a student in the yard, asked for the rooms of Dr. Monroe, the Professor of Anatomy. The student happened to be a pupil of Knox's, and, upon descover.ng their errand, he advised them to try Knox's place in Surgeons' Square. There they sold the body for £7 10s., a large sum for them, and very easily obtained. They had not courage to go into the regular business of body-stealing; nd so Hare, the vilest of the two, suggested a fresh stroke of business, which was to inveigle the old and infirm into his quarters and "do for them." Hare started in search of a victim; and, prowling through the slums, met an old woman half drunk, and asked her to his house. He gave her whiskey until she became comatose, and then with Burke's assistance strangled her. The body brought £10.

The appetite of the vampires was now sharply whetted, and they entered systematically upon the work of murder. Vagrants, street-walkers, and imbeciles, were allured on various pretexts to the house of Hare, made dead drunk, and suffocated. Emboldened by their successes, they began to pursue their thuggish practices even in daylight. A woman named Docherty was stifled, and her body, left half-exposed under some straw, was seen by two lodgers, who notified the police. Thirteen victims had been secured in eleven months, and all taken to the same place and sold. The prisoners were tried December 24, 1828, when Hare, the blackest of the villains, was let off by turning "state's evidence," and Burke was convicted, hanged, and dissected.

The effect produced upon the public by this horrible disclosure is indescribable. A new and unheard-of crime, that of "Burking," was added to the list of atrocities of which human fiends are capable. Astonishment and terror spread through the community. Households gathered their members within doors before dusk; workmen walked home from their night's toils in groups, as if in fear of being waylaid. The facts were appalling enough; but a thousand exaggerations and inventions filled the air, and intensified the universal excitement.—*From "A Popular Verdict," in Popular Science Monthly for September.*

WHAT CONSTITUTES A LIVE BIRTH?

Dr. John J. Reese, Professor of Medical Jurisprudence and Toxicology in University of Pennsylvania, contributes to the *Philada. Med. Times* (May 29, 1875), an important paper on this subject.

By the old English law which has been in operation for centuries, and which is recognized at the present day in several of the United States, the husband of a deceased wife who dies seized of an inheritance acquires a life interest in such inheritance, *provided* there was issue born alive. In the State of Deleware, which still retains the old English law on this subject, an important case lately occurred in which this principle was involved. The case (Stout *vs* Killen) was tried in Dover, May 4, 1875, before the Superior Court of Delaware, the Hon. Judge Gilpin presiding, on a writ of ejectment brought against the defendant for the recovery of a property that had passed into his possession, as "tenant by courtesy," on the death of his wife some years previously, through an infant alleged to have been born alive, but which survived but half an hour. The plaintiffs (the wife's heirs-at-law), on the other hand affirmed that the child was not born alive, and, consequently, that the estate did not pass to the husband. Here the whole case virtually turned upon the question of the live birth, and this, of course, involved the important query of what constitutes a live birth.

Two highly respectable physicians who attended the lady in her confinement testified that the labor was a protracted and difficult one, requiring the use of the forceps. The patient, moreover had convulsions. The child was large and fully developed, the chest was rounded, the lips were ruddy, the general color of the body natural (not livid). The umbilical cord distinctly pulsated for about twenty minutes after complete delivery; it was then cut. The heart and temporal arteries beat distinctly all this time, *and continued to do so for five or six minutes after the severance of the cord.* There was no perceptible respiration, and of course no cry; nor any spontaneous movements of the body observed. All the usual restorative measures were practised, but without effect; all evidences of life ceasing about half an hour after the birth. Both the physicians testified that they regarded the child as born alive.

As one of the expert witness called for the defense, Dr. Reese had no difficulty whatever in giving an affirmative answer to the question: Was this child born alive? and in this was ably supported by Prof. Penrose, of the University of Pennsylvania, and by several distinguished physicians of Dover. Dr. Reese bases his opinion upon the following data:

"It has long been a settled point in law, founded upon a recognized physiological fact, that respiration (or crying), although an important evidence of live birth, is by no means the *only* evidence. It is admitted that a child may be born and die without breathing; so that the wilful destruction of such a child is just as much murder as if it had cried lustily and moved its limbs vigorously. What the law requires in such cases is simply *proof of life*, not proof of respiration. Now, if life can be proved by other means than by respiration the law's demands will be satisfied. I think we must admit that the pulsation of the child's heart and arteries, after its full extrusion into the world, and especially after the severance of the umbilical cord, is a good evidence of life. Certainly the heart does not beat nor the pulse throb in a *dead* child; and there is no alternative between a dead child and a living one. Again, there can be no pulsation in the funis of a dead child; we all know that one of the surest signs of death in a child during parturition is the cessation of the pulsations of the chord. Furthermore, the redness of the lips, and the healthy (not livid) appearance of the body, together with the rounded condition of the thorax, were highly suggestive of a feeble, though imperceptible, respiration.

"The only attempt on the part of the plaintiffs to rebut this testimony was by alleging that this (admitted) life in the child was merely the remains of its intra uterine life—'a prolongation of its fœtal life'—extending its influence beyond the period when the child was separated from its mother, and galvanizing, as it were, what was in reality a lifeless mass of flesh and bones! This latter doctrine we hold to be untenable. The child was either alive or dead at its birth. Confessedly it was not born dead. No one would presume to bury an infant with its heart and arteries beating, and with a natural appearance of its lips and skin, even though it did not visibly breathe. Such a prolongation of life was, by the plaintiff's counsel, likened to the *momentum* imparted to a piece of machinery and retained for a while after the impelling power had been withdrawn. Here, the motion might, in truth, be said to be merely the 'remnant' of the antecedent power, and one that must of necessity soon come to a stop. But there is this immense difference between the two cases, which, at first sight, might seem so analogous: the machinery is but dead matter, subject merely to the laws of inertia; while the infant is endowed with a living organism capable of maintaining its own existence, provided it be furnished with the conditions of life. The idea is further sustained by the well-known fact that

many infants born apparently dead, and remaining for some time in this state, do actually revive and continue to live. I admit that, in a very important sense, its extra-uterine life was a 'prolongation' of its fœtal life, but precisely the same way as it is in all our bodies. Certainly there is no *new* life imparted to a child after it is born. The principle of life mysteriously contained in the vivified germ is the same life continued on in the matured man, only developed. The life of the oak of a century's growth is essentially the same life that evidenced itself in the first swelling of the acorn beneath the soil. All we contend for is *life*, not the amount or quantity of life, but the fact of life; and this latter we think was abundantly established by the evidence.

"Besides, the rulings of the courts, both in England and this country, have settled the question, in deciding that respiration (or crying) on the part of the new-born child is not required to establish the proof of a live birth, provided there are other evidences. Undoubtedly, the best physiological test of life is the pulsation of the heart. It is a more satisfactory proof than respiration, inasmuch as, in ordinary cases, life terminates in the heart, and not in the lungs or brain, since the heart is found to be beating some time after all evidences of breathing have ceased. The well-known experiments of Sir B. Brodie on animals also confirm this assertion. We do not pronounce a dying man to be *dead*, however feeble or inaudible his respiration may be, so long as we can feel or hear the throbbings of the heart; certainly we would hardly think it right to entomb such a person. And what is true of the man in this regard may be equally affirmed of the new-born infant.

"This Delaware case may be regarded as the leading case in this country, and the finding of the jury (which was for the defendant) may be considered as establishing an important precedent in cases of a similar character."

ON MICROSCOPIC EXAMINATION OF BLUE LINES ON THE GUMS SUPPOSED TO BE DUE TO LEAD POISON.

La Revue Medicale for April 12, 1875, quotes a paper by Dr. Gras on this subject from the *Archives de Medicine Navale.* He insists strongly that the lead-line is no mere deposit of that metal in or on the epithelial cells or connective tissue of the gum. It is due to a transformation of a soluable salt of lead into a sulphide of that metal during the slow circulation of the blood in the very minute capillaries of the gum. He says the demonstration is exceedingly simple, and almost painless. When we are in doubt whether a given blue line on the gum be due to lead or not, we should excise a fragment of the gum containing the line with a fine sharp scalpel or the point of a lancet, wash it with a camel's hair pencil, and add a drop of glycerine; if necessary, flatten it out with needles, and examine it under the microscope with a low power. If the line be due to lead, in the midst of the normal tissues of the gum we shall find capillaries injected, filled and obstructed by blackish granules. These capillaries are in loops, or semicircular or like double hooks, the outlines varying somewhat according to the section. In very old lead-lines the capillary walls are less evident and their outlines somewhat indistinct. If a piece of buccal mucous membrane be excised, we should use carmine with glycerine, and a little dilute acetic acid, which shows the mucous papillæ, and the capillary network. He suggests that in fatal lead-colic, the intestinal capillaries and the nerves of the solar plexus should be examined in the same

way for lead. [The Reporter does not kn ›w to whom the credit of the suggestion belongs, but it has long since been proposed to examine the lead-lines by a simple microscope, or in other words a one or two inch bi-convex lens; when, if in the capillaries, as the true lead-line is, it will be seen clearly to be dotted, and to follow the course of the vessels. It will thus be seldom necessary to remove any of the gum in the living subject, though after death this suggestion of M. Gras may doubtless be of considable use.]—*London Med. Record*, May 12, 1875.

Microscopy.

MICRO-MINERALOGY.

A paper read at a meeting of the San Francisco Microsoopical Society, July 15, 1875.

By Mr. Hanks.

In a scientific sense, the word "mineral," used as a noun, implies any inorganic substance, having a uniform chemical composition.

As an adjective it may also denote a mechanical mixture of two or more minerals, as for example, granite, which may be called a mineral substance in contradistinction to animal or vegetable substances. Granite is composed of quartz, feldspar, and mica, each of which are minerals in the first sense. The constituents of granite are often so finely divided as to deceive the unassisted eye, and to appear homogeneous. This is frequently the case with ores, which are also aggregations of minerals.

As a rule, crystals are pure minerals, although the rule is sometimes exceptional, as in the case of arenaceous lime-stone, resinous fluids in quartz and topaz, specular iron in feldspar, chlorite and titanic acid in quartz and other examples. If a mineral be a pure species, an analysis of one portion will give the same result as that of any othei portion. The practiced eye of the mineralogist detects at a glance any of the ordinary minerals when in large masses; but in obscure specimens the aid of the microscope is indispensable. In many cases what appears an amorphous, uninteresting specimen, when placed under the microscope, resolves itself into beautiful crystals of one or more well-known minerals. In attempting to analyze such samples without previous microscopical examination, the chemist is at a loss to account for the result of his investigation, and too often announces the discovery of a new species. The constant use of the microscope in the study of minerals will have a tendency to make the student skeptical as to many of the nice distinctions drawn by chemists in making new species. A recent investigation is a case in point: A specimen in the University collection having the appearance and giving the reactions of vitreous copper, was found to be magnetic. To the eye it appeared homogeneous, but the microscope revealed its composite character. Upon this discovery being made, a portion of the mineral was pulverized, and the magnet separated a considerable quantity of magnetite. Specimens supposed to be *Calaverite*, and before the blow-pipe giving all the reactions of that mineral, under the two-thirds objective are seen to be native gold in a free state, mechanically mixed with tellurium. The results of my microscopical examinations cause me to doubt if gold ever becomes mineralized in the strict sense of the term.

The modern first-class binocular microscope is admirably adapted for

the study of micro-mineralogy. Low powers will generally be found best suited to the use of the mineralogist. Except for thin sections and for the study of powdered minerals in exceptional cases, a higher power than the two-thirds will seldom be required, while for studying the various rocks, the four-inch will often be found the best.

To familiarize the student with the appearance of minerals under the microscope, a set of slides may be prepared for comparison by mounting fragments of well-determined minerals, freed as much as possible from foreign substances. My method of preparing them is as follows: The slide is placed on a card of the same size, upon which a dot of ink has been made to indicate the centre. A scale of shellac is held in the flame of a spirit-lamp; when nearly dropping it is touched to the glass over the dot. This insures a central position for the object when mounted. The slide is then heated over the spirit-lamp until the cement is liquid and the specimen placed on the melted shellac, with the best surface uppermost. It is then gently pressed down and the slide set aside to cool. It has then only to be labelled and placed in the cabinet.

Pulverulent minerals, small crystals, concentrated washings, etc., are best mounted in cells and covered with thin glass in the usual manner.

In some cases the dust from powdered minerals adheres to the glass cover if loosely mounted. In such cases I find it better to coat the slide within the turned circle with gum arabic, in rather thick solution. When dry, if breathed upon, the powdered mineral will attach itself to the gummed surface. The glass cover may then be replaced and cemented.

Those minerals of which rocks are composed, as, for example, albite, orthoclase, mica, labradorite, epidote, quartz, etc., should not only be mounted as opaque objects, but also in thin sections, to admit of their being examined by polarized light.

The study of rocks by aid of the microscope is growing yearly in favor, and no geologist will now decide on the character of a specimen without first submitting it to the optical test. To fully understand the rocks, which are composite, the student must familiarize himself with the optical properties ot the minerals composing them. He must learn to distinguish on the first turn of the polarizer the difference between quartz and feldspar, and to decide as quickly if the feldspar be orthoclase or albite. This can only be done by careful study of minerals.

For opaque minerals I find that the best illumination to be that produced by the parabolic illuminator, although the large bull's eye condenser will be found to produce good effects when the former apparatus is not at hand. The advantage of the illuminator is, that the light is thrown downward into the caveties of the specimen, which are often filled with beautiful crystals. In transparent sections in which opaque minerals are embeded, the parabola is indispensable. The most beautiful effects are often obtained by its use.

Thin sections should also be examined by polarized light; the details of the inner structure are by this means often brought out in an unexpected manner.

The microscrope can hardly be dispensed with in determinative mineralogy. If the mineralogist is called upon to decide upon the fusibility of a mineral and finds the result doubtful, he has only to strongly heat a thin fragment in the blow-pipe flame, and place it in the field of his instrument. If at all fusible the thin edges will be seen to be rounded. A fragment of a mineral containing alumnia, if wet with nitrate of cobalt, and strongly heated, will often show the prominent parts tinged blue under the microscope, when the unassisted eye fails to distinguish the reaction. Washings containing gold or sulphurets may be examined under a low power and their character known.

Metallic beads reduced from minerals may be distinguished. Blow-pipe beads may also be conveniently examined By the intermittant blast, technically known as "flaming," the fused bead in some cases becomes opaque, from the formation of crystals. Under the microscope these may often be recognized and the nature of the substance known.

Chemical reactions may also be made on minute portions of minerals under the microscope by the aid of two pieces of plate glass. A convenient size for these plates is three inches square. In the center of one a shallow depression is made. In this cavity the fragment of mineral is placed, the reagent added, and the other plate placed over it. The double plate is then placed in the field of the instrument, and the reaction observed. No fumes will escape to injure the instrument if the quantities are small. Sublimates made in glass tubes may be examined by breaking the tube and carefully picking out those portions upon which the sublimate has formed. If the tube is wrapped in a clean cotton cloth and struck a quick blow with a small hammer, the pieces of glass will be cleaner and the fragments larger than if broken without this precaution. Arsenious acids, sulphur, antimony, mercury, cinnabar, organic substances, etc., may be recognized with certainty in the sublimate.

In making quantitative blow-pipe assays of minerals and ores containing gold and silver, when the quantity of metal is small, it is the well known custom to measure instead of weighing the bead obtained by cupellation, using for that purpose the ivory scale devised by Platner. In doing so, the assayer often finds it difficult to place the bead in its proper position on the scale. This difficulty is avoided by using the microscope with Jackson's micrometer The bead is first placed on a glass slide and the number of divisions of the micrometer it covers is noted. The bead is then replaced by the scale, which is moved in the field until the distance between the lines of the sector equals the same number of divisions of the micrometer which were found to indicate the diameter of the metallic globule. At the same time the reading of the scale, giving the value of the bead, can be seen and noted. If the micrometric value of each division of the scale is determined and the results tabulated, all further use of the scale may be dispensed with.

The examples I have given are those of most common occurrence, but others will suggest themselves to the mineralogist, my experience being that the more the microscope is used in determinative minerology, the more indispensable it becomes.

The adaptability of the microscope to practical use was further shown tn the general conversation the above paper brought out among the members present, and Mr. Hanks, who is never happier than when showing how the microscope can be utilized by the assayer, mentioned among other cases, of an instance where a sample of sand had been brought him containing gold particles, and which assayed away up in the hundreds of dollars, but that the microscope revealed the fact that the minute gold particles were fillings and cuttings from a larger piece and not a natural deposit, a fact which an assay never could determine.

This exposition of ways that are dark called out so many experiences of gigantic salting operations, that they no longer could be counted as microscopic, and after the examination of some test objects by Mr. Hyde, the meeting adjourned till August 5th.

PATHOLOGICAL SOCIETY OF LONDON.

At the ordinary meeting of this Society on May 4th, Mr. George Pollock, President, in the chair, the debate on the Germ Theory of Disease was resumed and concluded. Dr. Murchison made a powerful speech against the germ theory and in favor of the *de novo* origin of specific fevers. Mr. Wagstaffe and Dr. Goodhart detailed the results of their examinations of blood as pus under different conditions, the conclusions arrived at by each observer being somewhat conflicting; while Dr. Payne, in a speech favoring the germ theory, directed attention to the precise significance of bacteria and their relation to putrefaction. Dr. Bastian made an effective reply, and the meeting (which was less fully attended than on the previous two evenings) adjourned. It is understood that a very large number of specimens are down for exhibition at the next meeting (May 18th)—the last of the session.

Dr. Murchison.—Mr. President: Not having much personal knowledge on the subject of bacteria, it was not my intention to have taken part in this debate; but having been requested to do so, I will make a few remarks suggested by the observations of previous speakers and by my own experience of those diseases in which bacteria are believed to play so important a part. And, in the first place, I would advert to the very interesting speech of Mr. Jonathan Hutchinson at the last meeting, who endeavored to draw a distinction between so-called virulent and contagious inflammations and the acute specific fevers. He maintained that "their phenomena and their clinical history prove that they are specific; that they run a definite course, protecting the organism afterwards; that they breed true, which is the test of specificity; that they seem to require that the germs which have produced them in one individual shall be applied, and that they are producible by no other means." For this class of diseases Mr. Hutchinson expounds the germ theory in its entirety, and he maintains that "these diseases are only produced by a germ in the sense of a seed, just as we may sow a definite crop in the ground, and should know that we could not get a crop unless we sowed the definite seeds." But with regard to the acute specific inflammations, Mr. Hutchinson is of the opinion that these facts do not at all apply to them. He thinks that it is unnecessary that for the spreading of them there should be any germs at all, and he rather seems to think that the products of inflammation are in these diseases the medium of contagion. In support of this view he states that the resulting disease very often differs according to the nature of the pus which is selected for inoculation. Now, while admitting that there are differences between some of the acute specific fevers and contagious inflammations, my own experience is quite opposed to the view that as regards the question under discussion there is that radical difference between them which Mr. Hutchinson would have us believe. In fact I have long been in the habit of teaching that even among the acute specific fevers themselves there is not that agreement which Mr. Hutchinson and other authorities would ascribe to them, and that these diseases may, from an etiological point of view, be subdivided into groups, which differ from one another quite as much as the acute inflammations differ from some of them. One or two illustrations of this I may mention. Relapsing fever is one of the acute specific fevers; it is, under favorable circumstances, eminently contagious, and yet we know that one attack of it confers not the slightest protection from a subsequent attack of the same disease. And the same might be said of diphtheria, of cholera, and of other diseases belonging to this class. Then again, there are differences as to

their degree of contagiousness, and as to their mode of propagation. Some undoubtedly are very contagious, others again are very slightly so; some are propagated through the atmosphere as well as by inoculation, others are propagated by inoculation alone; some are propagated only in the presence of glaring defects of hygienic arrangements, others are propagated quite independently. Then as to the argument that the resulting disease differs in its severity according to the nature of the poison, a character which Mr. Hutchinson argued was peculiar to the acute specific inflammations, I must confess that it is a character which I have long been familiar with in many of the acute specific fevers. No doubt in the acute specific fevers the resulting disease is more influenced by the constitution than in the case of the acute specific inflammations, simply for the reason that they are on the whole of a more general and a less local nature than the acute inflammations to which Mr. Hutchinson specially adverted. But in that very Protean disease, typhoid fever, I have long observed, and have been in the habit of pointing out, that the type of the disease, and even the symptoms and the complications, vary according to the source of the poison. And even in the case of scarlet fever, we all know that different epidemics occurring at the same time vary very greatly in their type and in their malignancy. Lastly, I certainly, for one, must join issue with Mr. Hutchinson when he says that none of the diseases coming under the head of the acute specific diseases are producible except by germs derived from a person already affected by the same disease. The evidence which can be adduced to prove that such a disease, for example, as diphtheria or as dysentery—and here I may mention that dysentery holds a place among the acute specific diseases very closely allied to typhoid and cholera,—the evidence of its contagiousness, to my mind, is certainly quite as good as the evidenee of the contagiousness of enteric fever; yet I say the evidence of these diseases being produced *de novo* appears to me to be so strong that I can scarcely fancy its being rejected by any one whose mind was not already prejudiced in favor of the germ theory of disease. For these and other reasons I cannot agree with the view Mr. Hutchinson expressed, that there is such a great distinction between the acute specific inflammations and the so-called acute specific fevers. I think that if the germ theory be applicable to the one it is applicable to the other, and if it is to be rejected for the one it ought to be rejected for the other; and, moreover, it must be remembered that propagation by means of germs has been claimed for the one as well as the other. And this brings me to say one or two words in reference to the germ theory of disease. If I understood my friend Dr. Anderson aright, he told us that not much good could be expected to arise from discussing theories on this matter, and that we ought to confine ourselves to the discussion of facts; and the fact on which he specially insisted was this—that during the infective process, in the course of the different infective diseases, there was a great development of bacteria; but he refused to commit himself to an opinion as to whether these bacteria were to be looked upon as casual, or whether they were pathological results. Now this way of viewing the matter is all very well for a man of Dr. Sanderson's scientific caution; but unfortunately these observations—the discovery of bacteria in various infective diseases, and even Dr. Sanderson's own observations, and those made under his immediate superintendence—have been used by other writers as strong arguments in favor of the germ theory of disease, and also as suppporting views having very great practical importance. In corroboration of this statement I may call to the mind of the Society the letter upon typhoid fever, which was published by Professor Tyndall in *The Times* a few months ago, in which it was announced that "Dr. Klein has recently

discovered the very organism which lies at the root of all the mischief, and to the destruction of which medical and sanitary skill will henceforth be directed." I am sure that Dr. Sanderson himself would be the first to repudiate any such constructions upon the observations of Dr. Klein, and I am quite sure of this, that most of those who have attended the discussions of the two previous meetings must be satisfied that no such announcement was justified by Dr. Klein's discovery of bacteria in connection with the lesions of typhoid fever, and they will also be satisfied that this discussion will do good if it does nothing else than help to correct such an erroneous notion. With regard to bacteria, the following facts appear to me to have been established. In the first place bacteria may be injected in large numbers into the blood of the lower animals and they suffer nothing. In the second place, bacteria exist in large numbers in certain tissues of the living body in a state of health. Thirdly, they are said to multiply very greatly after death in persons who have not died of any infective disease. In the fourth place (it seems to me that this is a very important observation), we have been told that bacteria are developed in large numbers in a vesication in the skin produced by chemical irritant. In the fifth place, it is also said that in certain contagious fluids the more the bacteria multiply the less virulent the fluid becomes. Then, lastly, there is the statement made on good authority, that neither bacteria nor bacterial germs can be found in certain fluids eminently contagious. I am not sure if this last statement was made in this discussion, but it was put forward very strongly a few years ago by Dr. Beale in one of his contributions to this subject. These facts, it seems to me, go a long way to throw doubt upon the casual relation between bacteria and the infective diseases. On the other hand, however, arguments have been brought forward tending in an opposite direction. In the first place, it is argued that although some bacteria may be perfectly harmless, it does not follow that other bacteria may not be very injurious indeed; but it seems to me that this argument has been very well answered by an experiment of Mr. Lister's, who showed that the same bacteria might produce very different results according to the circumstances in which they were placed. It appears to me that if this observation be correct the result depends not so much upon the bacteria as upon the surrounding conditions. Then, in the second place, it is stated that in erysipelas bacteria are found chiefly in what is called the spreading zone, and not in the interior of the diseased part; but really this does not appear to me to tell much one way or the other. I really do not see that this fact is incompatible with the notion that the bacteria may be pathological results. And then, thirdly, it is stated that in certain diseases, and especially in relapsing fever and in sheep-pox, there are peculiar forms of bacteria—bacteria which are only found in these diseases,—specific they may be called. But although no doubt this is the case, it seems to me that these peculiar forms may be accounted for by the peculiar soil in which what may be called the native bacterium of the individual is made to grow; because we also know this, that with regard to these minute growths the most varied forms are assumed according to the soil in which they are cultivated. Now, it appears to me that this view of the case is confirmed by what we see and what we know of the so-called spirilla of relapsing fever. These minute bodies, which are found in the blood, make their appearance in large numbers during the primary paroxysm of fever; but before the crisis they disappear; they are absent entirely during the intermission, and with the relapse of the fever they return, and they again disappear with the second crisis. It appears to me that these appearances of spirilla and their sudden annihilation twice over are best accounted for by the varying soil in which they happen to be present—that

is, that the soil of the fever process seems to be congenial to their growth, but that the moment the fever process is complete the blood is no longer compatible with their growth, and they suddenly disappear. Taking all the circumstances into consideration, then, it does appear to me that the discovery of bacteria in the bodies of persons suffering from various infective diseases has not, so far, done anything to coroborate the germ theory of disease. It does not follow, however, for this reason that the germ theory is untrue. There can be no doubt that a great many arguments may be brought forward in its favor. Many of these arguments were ably stated at the last meeting by Dr. Maclagan; but it sems to me that the more important arguments are arguments founded upon analogy rather than upon fact With regard to the facts of pyrexia which Dr. Maclagan referred to, it seems to me that they can be quite as easily explained independently of germs as with them. And then there was one fact to which Dr. Maclagan attributed great importance as an argument in favor of the germ theory. It was this: he seemed to think that the cutaneous eruptions and the local complications of the various infectious diseases were best explained on the germ theory, because, as he has argued, the vital germs found in these organs which became the seat of lesions the second factor necessary for their multiplication and growth. This is an argument, however, which, to my mind, certainly has very little weight; for we find that arsenic exhibits very much the same sort of vitality. You find that inflammation of the stomach and inflammation of the rectum will be produced by arsenic, whether it is introduced into the intestinal canal or into the vagina, or the nostrils, or the skin. And it is to this predilection of certain medicines for certain organs and tissues of the body that we look for some of the greatest discoveries in therapeutics; some have already been made, many others no doubt will be made. There is one other argument to which it appears to me a great deal too much stress has been given in favor of the germ theory. It is alleged that the germs of disease show that they are vital by the length of time that they will retain that power, notwithstanding their being subjected to the most destructive chemical and physical influences. Now, I must say that I think this argument has been too much strained. There can be no doubt the germs of small-pox and scarlet fever will retain their vitality for a very long period indeed under favorable circumstances; but I myself know no facts that will show that, even with regard to two such contagious diseases as scarlet fever and small-pox, the germs will retain their vitality for any length of time if they are freely exposed to atmospheric air; and I think myself that this is an argument which has to often been overlooked—a strong argument opposed to the omnipresence of vital germs, of the germs of disease, which is a necessary element, you must remember, of the germ theory. There can be no doubt, however, that the strong argument in favor of the germ theory of disease is the multiplication of the poison. It is this which has been so aptly compared to the multiplication of living germs. It is contended that in chemistry there is no such process, that there is no instance in chemistry of a body which excites a chemical change being itself multiplied. Now, it does not follow, however, that although no such process in chemistry may have hitherto been discovered that no analogous process to that of contagion may not yet be discovered; and in reference to this I hold in my hand a letter which I have received from Dr. Lyon Playfair, calling my attention to one process which, at all events, is somewhat similar to what takes place in the multiplication of contagion. The substance he refers to is the substance oxamide. This substance, it is well known, is decomposed when it is boiled with acids, or with alkalies. It is decomposed into oxalate

of ammonia, and if the acid selected be oxalic acid, as Dr. Playfair says, a small proportion of this oxalic acid will convert an infinite quantity of oxamide into oxalate of ammonia; in other words, oxalic acid, the substance which excites the change, will itself be multiplied, quite independently of the presence of any vital germs. In speaking of this matter, then, it seems to me that it is not right to speak, as is commonly done, of the poison multiplying itself—this in itself conveys a theory,—and that it is far more correct to say that the poison is multiplied, which is all, in fact, that we really know. It may so happen that it may hereafter be discovered that these diseases are propagated neither by germs nor by any chemical process, but that they may be propagated by minute particles acting by contact in producing other similar particles, just as we find in the case of tubercles or pus. This, however, is for the present a conjecture. There are two arguments, however, which have always appeared to me to be of great weight as opposed to the germ theory of disease. The first is this: the fact that the great majority of persons attacked with these infectious diseases recover. It seems to me very difficult to account for this on the germ theory. I know that it is said that they recover because the germs have exhausted all the material in the body necessary for their production and growth; but it seems to me that what occurs in relapsing fever is opposed to this explanation. In relapsing fever we have, in the first place, a febrile process lasting a week; then there is a complete intermission of another week, and then there is a relapse similar to, but somewhat shorter than the first attack. Now if the germs exhausted all the material necessary for their growth in the first attack, whence comes the material necessary for their growth in the second attack—in the relapse? This material can not be produced by the febrile process, because on the germ theory the febrile process is itself the result of the germs. Then the last argument is one to which I have already referred—namely, the circumstance that many of these infective diseases arise independently of a pre-existing cause. The germ theory renders it impossible to admit such a possibility, and in fact it may be said that those who uphold the germ theory practically deny that it is possible for any of these diseases to arise *de novo*; but, as I have already said, it seems to me inconceivable that anyone weighing carefully the evidence on this point, in reference to such diseases as pyæmia, erysipelas, diphtheria, cholera, dysentery, and typhoid fever, can come to any other conclusion than that such a thing is possible—the generation *de novo* of these diseases—except their minds are already pre-occupied by the germ theory of disease.

Mr. Wagstaffe.—I shall not venture, Sir, to express an opinion upon the explanations that have been given by the great English observers upon this subject as to the cause, the nature, and the meaning of these organisms, but I think the subject may be advanced somewhat by any record of the facts which go to point to the conditions under which these organisms are found in the human body. The most important of these observations have already been referred to by Dr. Sanderson and by previous speakers. They are particularly what Dr. Murchison has just referred to—the spirilla in relapsing fever, the bacteria in the blood in splenic fever, also the micrococci found in the tissues in sheep-pox and in small-pox. These observations, however, seem to have hardly received the attention they deserve, or the notice that one would have expected, at the hands of Dr. Bastian, and I had hoped that in the course of this debate we should have had the opportunity of hearing the experience of some of those who have paid attention to the conditions under which these organisms appear. During the last two years I have been engaged in looking at the secretions of the blood, particularly of certain classes of patients, partly in conjunction with Dr. Sanderson,

partly independently, and of these it may be interesting and not unprofitable to state the results which have been obtained at the end of these observations. I would divide the results into two classes, negative results and positive results. With regard to negative results I may state a most important fact, one which has been proved before, that during health no organisms of any kind are usually seen in the blood; but under certain conditions, which it is very difficult to understand, organisms of certain kinds which we are not able to distinguish from those found in disease are found in what we may look upon as a healthy state. For instance, a man named Marks was a curious example of this kind. He came under my notice while I was examining a number of cases of erysipelas. He was in an erysipelas ward. His blood was full of these organisms, as many as from ten to twelve being in every field of the microscope, actively moving about. I examined his blood under other conditions when he was quite well; he was still in the same ward; at times he was well, and at times he was ill; and he always showed a large number of these organisms.

Dr. Bastian.—May I ask which organisms?

Mr. Wagstaffe.—Small micrococci, active moving granules, dumb-bells, and sometimes beads. This case has its parallel in a case referred to by Dr. Sanderson in his lectures, in which a person in apparently complete health had in his blood a number of organisms; but Dr. Sanderson does not mention whether they were actively moving, whether they were like the ordinary micrococci that are seen in putrefaction. Then there is another class of negative cases. In a very large number of cases of subacute and chronic inflammatory disease there were no organisms whatever found, and it is an important point, I think, to notice that even in the pus of a chronic or subacute abscess none of these organisms were found in some cases that were examined, not by myself alone, but also by Dr. Sanderson. There is another case which I would particularly refer to—that of a woman in whom there were symptoms of what appeared to me to be pyæmia, but which turned out afterwards to be not true pyæmia at all, but simply suppurations in different parts of the body, and particularly in certain joints. In that case the pus was examined from the joints, the blood was also examined from the finger, and in neither case were any of these actively moving organisms found. Taking also a number of other cases indiscriminately, it was found, on examining the whole of the side of a large ward, that none of these patients, suffering from very different diseases, showed any definite signs of these organisms in the blood. Some of these patients were suffering from acute and subacute diseases; in some the temperature was standing at 102°, but in the majority the temperature was standing low; some had open wounds, some had no wounds at all; and none of these cases, taken indiscriminately on a certain day, showed any of these organisms whatever. Then, with regard to positive observations, the first point to which I would refer, as to the result of those observations, is that pus from an open wound always contained these microzymes, these small, actively moving particles. Then, with regard to the blood of patients suffering from suppurative fever, it always showed these microzymes. (I use that term as a general term, including chiefly small actively moving particles, and also dumb-bells, and chains apparently of the same bodies running together.) Then a third class of cases in which I nearly always found these particles was the class of strumous diseases, particularly affecting the bone. Here the particles varied apparently in number according to the intensity of the constitutional disease and the inflammatory process. In cellulitis also the same results were seen. Out of twenty-four cases examined as many as twenty showed in the blood the same moving particles, the number varying

with the intensity of the disease. Then in all cases of pyæmia examined the blood contained these particles, chiefly dumb-bells and chains, and in addition to that usually a number of bodies not actively moving, apparently small plastic bodies—some actively moving, but the majority of them quiet. This observation particularly differs from that which Dr. Bastian has mentioned in his address. But I have recently had the opportunity of comparing the microzymes present in the pus of a pyæmic abscess and those present in the blood of the same patient; and these bodies were apparently identical. Then another class of cases in which they were nearly always found were cases of acute syphilis; and in those cases another appearance presented itself, which is rather curious—large plates of plastic matter, extremely granular, were seen in the field of the microscope, and the number of these particles varied with the intensity of the constitutional disease. In cases of another kind, not surgical, cases where there was no wound at all, cases of general fever, particularly of acute pneumonia, the same particles were also found in the blood, but in much smaller numbers. Lastly, I may refer to the progress of an ordinary case of a large wound of amputation. In some cases I have been enabled to follow the appearance of the blood in these cases from day to day. In one case, that of a boy whose thigh was amputated, five hours after the amputation the temperature being 102° F., there were as many as from twelve to twenty microzymes actively moving in each field of the microscope; and when it is remembered that each field represents only a very small portion of a drop of blood, and that each drop represents not more than a hundred-thousandth part of the body, we may assume that these particles are extremely numerous in the body in such a case. On the second day, the temperature being 101.2°, there were as many as twenty or thirty in every field of the microscope. On the third day, when the temperature was 101.6°, they were reduced to three or four in each field. On the fourth day, the temperature being the same, they were reduced to one or two, gradually diminishing in number until three weeks after the operation, when they increased in number with the appearance of an abscess in the thigh. After this they diminished and disappeard entirely. This is one of several cases which we have examined that follow on the same course. These facts seem to show a very close relation, as no one will hesitate to allow, between the appearance of these bodies and the active changes which are going on in the body—between the bacteria (using the term as a general one) and the inflammatory process. I do not wish, however, to venture an opinion upon these theories or the explanations which have been given, but I have laid these facts before the Society in the hope that they may be supplemented by other observations which I know have been made by members of the Society in the same direction.

Dr. Goodhart.—The observations which have been made are exceedingly interesting to me, because they somewhat clash with some observations which Dr. Moxon and myself have been making during the last two years; and inasmuch as positive facts are better than negative ones, although my facts may not be of so much value, it will be as well to detail them to the Society very summarily, so that they may go for what they are worth. Dr. Moxon and myself during the last few years have been particularly engaged in examining in the same direction as Mr. Wagstaffe. We have taken all classes of fevers, including cases of erysipelas, one or two cases of typhus, cases of measles, scarlatina, and one case of variola. The conclusion we rather came to was this: first of all, that it did not apparently seem to matter very as to what the condition was that produced the fever, whether it was a specific fever, or a case of pyæmia, or surgical fever, or what not—all the cases seemed to have very much the same appearance. As con-

trasted with healthy blood, the appearances we noticed were that there was a very large amount of granular matter in the blood. In no case have we found any moving particles in the blood when the patient was living; that has been our great objection to calling what we found "bacteria." We found a large number of granules, which had very much the appearance of the refracting granules seen in degenerating blood-corpuscles; they had a tendency to aggregate into masses; sometimes there were large masses, which corresponded almost precisely to what has been called zooglœa, and in a large number of cases there were beaded chains. In no case during life did we find anything like a rod-like particle; they were only these rounded spheroids, as they have been called, or the compound spheroids, chains, or aggregated masses; we never saw them moving. These were so very much like the granules one sees in the blood, that we were hardly disposed to call them bacteria at all, more especially as on applying the caustic potash test they nearly always disappeared. These experiments appeared to us to coincide exactly with the observations made by Dr. Bastian, and which were laid before this Society in 1869. They only differ in this, that he at that time found rod-like particles in the blood, and so far, I suppose, these particles which Dr. Bastian found might have been called bacteria; I do not think in that particular communication to the Society he called them bacteria, but they were rod-like particles. We found nothing of the kind. I thought very likely that the difference between his results and ours might depend upon the fact that, while we examined the blood immediately it was removed from the body, he, as far as I understood, waited some five or six hours, which, I thought, was sufficient to develop bacteria. That is all I have to say with special reference to the blood. Dr. Sanderson threw out a suggestion that if bacteria were not present actually they were potentially; that is, I suppose, that under favorable circumstances bacteria would develop more readily in pyæmic blood or the blood of fever patients than it would in patients where there was no such fever. To test that we removed some blood in various cases and kept it in capillary tubes for a certain length of time, and with greater readiness than in healthy blood the bacteria did appear, and were moving certainly. We also carried out a further branch of the same experiment in this respect, that pus and inflammatory products were also removed from serous membranes and from abscesses, and they also appeared to develop very rapidly into these rods, spheroids, and beaded chains; so that, as far as our experiments went in that direction, they perfectly confirm Dr. Sanderson's, that there was apparently some greater tendency to the formation of bacteria in these fluids than there was in healthy blood. The next series of experiments rather went to show, or were intended to ascertain, if there was any relation between the spreading conditions of erysipelas and bacteria. We removed blood from the spreading edges in cases of erysipelas, and in those cases we could come to no other conclusion than that there was not any bacteria—that is to say, in the juices we removed we could not find gangrene. We found in the blood of fever patients the same beaded chains, dumb-bells, and spheroids; but no rods, no moving particles. Lastly, we examined cases of closed abscesses, and also discharges from wounds, sores, stumps, and so on; and here one can coincide with Mr. Wagstaffe—in all the cases of discharge examined from stumps and sores, moving bacteria in chains and rods, and also spheroids and dumb-bells, were present in large quantities. In closed abscesses, also in pyæmic cases, we did certainly in some five or six cases find bacteria present. I think these are the principal observations we made during the past two years. There is one case I should like to narrate in relation to a case mentioned by Mr. Wagstaffe just now, in which he said pus removed

from a knee-joint contained no bacteria. That case, again, is rather in opposition to what I had observed. It is, of course, very difficult to get pus from joints in cases of pyæmia during life—at least it has not fallen to my lot; but a case happened the other day which I will state, as it was exceedingly interesting to me. There was a case of scarlatina in Guy's Hospital; and, only separated by a partition, a current of air running along so as to run from one bed along the side of the other, there was an oldish man admitted for some nervous symptoms, which in a woman would be called hysteria. There was no wound on the patient at all, and otherwise he was perfectly well. He however became ill and feverish, with a temperature of 104°. A slight blush appeared upon one wrist, and one knee-joint rapidly filled with pus. He had evidently pyæmia. I examined his blood very carefully two or three times, but could not find any bacteria. I requested our house-physician—Mr. Paul, a most competent microscopist, to examine the fluid immediately before the patient died. He did so; and there was a large number of still bacteria there, but no moving ones. That would quite coincide with what I observe in other cases—that there is a great rapidity in the formation of bacteria in the inflammatory products in serous membranes; but, as far as I have had opportunity of observing parenchamatous inflammations, they are not nearly so likely to form bacteria.

[To be continued.]

ELEMENTARY TISSUES.

CELLS—THEIR NATURE AND FUNCTION.

Notwithstanding the apparent diversity in the structure of the various tissues of which animals and vegetables are constituted, recent microscopic research has demonstrated that all textures originate from cells.

The ultimate fibres of muscles are formed of corpuscles arranged in rows; the soft tissue of the liver, and the hard texture of horn are equally constituted of cells; even the seemingly homogeneous filaments of fibrous tissue are associated with occasional nuclei which bear testimony to their cellular origin. In fine, from the first trace of embryonic life to the cessation of animal existence, all the marvelous processes of vitality—the origin, development, reproduction, and decay of the organism—are dependent upon the development and metamorphosis of cells, differing from each other in form and function, but uniformly constituted of a membrane termed the cell wall, so arranged as to form a sac capable of enclosing both fluid and solid contents.

In the interior of many cells is a small body of granular structure named the nucleus. Within the nucleus there are to be discerned occasionally one or more smaller bodies called nucleoli.

SIMPLE CELLS.

Many vegetable cells have within them a second cell called by Mohl the "Primordial Utricle." The wall of the outer cell is sometimes quite separate from that of the Primordial Utricle, but occasionally they are so closely connected, as to require the aid of chemical agents (alcohol or hydrochloric acid) to render them apparent.

In cartilage cells a Primordial Utricle may often be distinguished.

Preparation.—The tissues of young plants, or algæ, or specimens of cartilage, may be selected for examination. Minute fragments of either object ought to be placed in a drop of water on the slide and carefully

teazed out for the purpose of obtaining the cells separated from their connecting tissues in order to examine them singly; if possible, no more than two or three should be in the field of the microscope at the same time.

Cells, especially those of plants, are often connected by an intercellular substance so cosely allied to the cell wall as not to be distinguished from it even by the aid of chemical reagents.

Cells vary much in size, and, as a rule, vegetable cells are larger than those of animals.

In shape, cells may be spherical, oblong, polygonal, stellate, or fusiform.

Cells may coalesce with adjoining cells, and by communicating with them, form tubes; or they may undergo still further modifications and form fibres, bands, or spiral vessels.

They may be spread out so as to form a membrane, either being immediately united by their edges or connected together by some intervening tissue.

ORIGIN OF CELLS.

1. Cells may arise from a formative fluid, derived from the blood, called the "blastema."

In the blastema minute granules, termed cytoblasts, appear; a number of which granules becoming grouped together form the nucleus, round which the cell membrane is afterward developed by the coalescence of a series of other granules. The nucleus may either remain in the center, or become attached to some part of the cell wall.

2. Cells may arise within parent cells by an endogenous process of development.

The first step is the formation of several nuclei by the breaking up of the original nucleus; the second step is the subdivision of the cell's contents into as many portions as there are nuclei, each portion enclosing a nucleus; lastly a new cell wall forms round each part and completes the process. In this way a number of cells may be enclosed within one common investing membrane, as seen in the cleavage of the yolk of the ova of some parasites.

Another form of endogenous development occurs in cartilage, commencing by the division of the nucleus into two parts, followed by the passage of a partition from the cell wall of the parent separating the cell into two parts, each part enclosing a nucleus. It often happens that the parent cell wall remains entire for some time, and the same process is repeated until one original cell may contain two or three generations.

3. New cells may be produced by the process of division or budding. In this, as in the other methods of multiplication, the nucleus is seen to divide first, then the cell becomes constricted in the middle, and lastly splits up into two; this process of development is observed in free cells floating in fluids—the blood of the embryo chick for example.

In the juices of glands the new cells appear to be formed as buds upon the original cells, and ultimately to separate from them, and then give origin to others in the same manner.

ON THE FUNCTION OF CELLS.

Simple Cells forming a Covering.—A good example is found in the delicate tissue covering the inner layers of the onion; in order to examine it, remove some of the outer portion of an onion, and then with the point of a knife peel off a piece of the fine membrane from one of the inner layers, place it in a drop of water on the slide, apply the covering glass as directed, and view the object under a low power.

If the preparation has been properly made, the tissue will appear as a single layer of fine oblong transparent cells, united by their sides and edges, with here and there a nucleus in their walls.

Cells Performing the Office of a Store House.—In the potato and other bulbous tubers, there are cells in which are stored up numerous granules of starch.

Preparation.—Obtain, if possible, the fresh root of the *Iris Germanica* for examination.

Make a thin transverse section with the razor, place it on the slide in a drop of water, put on the covering glass, and examine with the high power.

The large polygonal cells appear filled with starch granules, collected in different parts of their interior, and a drop of a dilute solution of the tincture of iodine, applied to the edge of the covering glass, will soon render the starch granules more distinct, by forming with them the blue iodide of amylum.

The starch granules of the potato vary much in size; many of them are very large and furnish good examples for examination. Either a fine section of a potato, or little of the pulp scraped off, is to be placed in a drop of water on the slide, covered and examined under a high power.

A minute spot, called the hilum, will be noticed in each granule, marking the point of its attachment, in its newly developed state, to the wall of the cavity in which it occurs. Round the hilum there are well marked concentric lines.

Instead of nutritive material, like starch, cells may contain coloring matter.

Such cells are found in the integument, in the hairs, in the choroid coat of the eye, and in many other textures.

In order to obtain specimens of pigment cells take an eye of a bullock or other animal, cut it open and allow the humors to escape, peel off the retina, and with the point of the scalpel slightly scrape the black part of the choroid coat, avoiding the metallic colored part; place the black matter so collected in a little water on the slide, taking care that a very small quantity only shall be distributed through the fluid, apply the covering glass in the usual way, and examine the object with a high power.

A number of hexagonal cells will be seen, filled with pigment granules, and having often a light colored nucleus.

The depth of the color of the pigment cell depends upon the number of granules which it contains.

COMPLEX CELLS.

Cells may have more than one office to perform. For example, the cuticular coverings of many plants are furnished with stomata, or breathing pores. Stomata do not exist in plants which grow under water; but in those whose leaves float on the surface, there are stomata on the side exposed to the air, and none on that in contact with the water. In some instances as many as 160,000 pores have been found in a square inch of surface.

A leaf of the *Iris Germanica* should be selected and the thin transparent cuticular layer, peeled from the surface, placed in a drop of water on the slide, covered and examined with both low and high powers.

The stomata consists of two kidney shaped cells having granular contents. Each pore opens into an air cavity.

Cells with Moving Contents.—In many water plants, the cell contents are in a state of constant activity, giving rise to the appearance of a circulation, from which, however, the action is entirely distinct. In the *Vallisneria*

spiralis (a native of Southern Europe) or the *Nitella flexilis*, the process is most easily examined.

Preparation of Vallisneria.—A portion of the moist fresh plant being laid on the thumb nail of the left hand, thin longitudinal sections should be made with the razor, and immediately placed in warm water (80° to 100° Fahr).

After a short time a specimen may be transferred with a drop of the water to the slide, covered quickly and examined by the high power. Should the movements not be apparent, the slide should be slightly warmed over a spirit lamp. When the preparation is successful, the chlorophyll granules will be seen moving down one side and up the other of the cell wall, never passing in opposite directions on the same side.

In son e places, the granules will be observed moving round a center, or passing in a continuous stream through long tubes.

The movements will occasionally continue when the plant is putrid.

Nitella requires no preparation beyond placing a small piece of the plant on the slide in a drop of water, covering it, and examining the object under a high power.

In a small zoophyte trough, *Nitella* may be kept growing for some time, always ready for observation.—*From Histological Demonstrations.*

[To be continued.]

A NEW POINT IN THE DIAGNOSIS OF OVARIAN DISEASE.

At the Pathological Society, last Tuesday, Mr. Spencer Wells mentioned a very striking fact in illustration of the practical use of the microscope in the treatment and prognosis of disease. He has long taught that single cysts near the ovary may be truly ovarial (excessive growth of one Graafian follicle) or extra-ovarian (dilatation and growth of part of the remnants of the Wolffian body, or parovarium). And he has found that, while the extra-ovarian cysts are often radically cured by a single tapping, the cyst contracting and never refilling, the true ovarian single cysts are almost certain to fill again. He had also shown that the contents of the parovarian cysts consisted of little more than pure water, with scarcely any albumen, or only a little albuminate of soda, the specific gravity seldom exceeding 1005 Mr. Thornton has recently discovered that the fluid in some single ovarian cysts contains little groups of cells, which he believes are only formed from the lining membrane of the Graafian follicle; and the presence of these cells, with the higher specific gravity and the amount of albumen or paralbumen in the fluid, are sufficient to enable a surgeon to say, after tapping a single cyst, whether it is likely to be radically cured by tapping only, or whether it is almost certain to refill and require ovariotomy.—*Med. Times and Gazette.*

Anatomy of Amphioxus.—A paper on this subject has been read at the Linnean Society Professor Ray Lankester, F. R. S. The author described the anatomy of *A. lanceolatus* as worked out in a series of sections made from numerous specimens collected by him at Naples. In opposition to Stieda, the truly perforate structure of the pharynx was asserted. A true body cavity or cœlon, distinct from the atrial chamber was described, and it was shown to expand and attain a large development in the post-atrioporal regions of the body. A pair of pigmented canals were described, apparently representing the vertebrate renal organ in a degenerate or else a

rudimentary condition. Johannes Muller's pores of the lateral canals were shown to be hyoid slits leading into the pharynx. The attachment of the pharyngeal bars to the wall of the atrium by a series of pharyngo-pleural septa was minutely described. It was further shown that the marginal ridges of the ventral surface (metapleura) are hollow, containing a lymph-space, and that they, as well as the plates of the ventral integuments, disappear when the atrial chamber is largely distended with the sexual products. Drawings by Mr. W. J. Fanning, of Exeter College, were exhibited in illustration of the above statements.

THE COMPOUND MICROSCOPE IN THE EXAMINATION OF PATIENTS.

The *Monthly Microscopical Journal* states that Dr. H. G. Piffard has devised a simple contrivance, by means of which the binocular microscope can be employed in the ordinary "out-patients' room," for the examination of the skin of patients suffering from skin diseases. Dr. Piffard says:—"The objectives which I employ are a 6″, 2″, and 1″ of Grunow, and 4″ and ½″ of Ross. The ½″ is made with taper front, specially constructed for use with reflected light. The advantages of this arrangement over the single lens are enlargement of the field of view, absence of the spherical and chromatie aberrations, convenient distance of the observer's eye from the object observed, ten times the amplication practically attainable with the single microscope, and, lastly, the very great advantage of true stereoscopic vision. With the instrument described any portion of the integument, from the scalp to the soles of the feet, can be conveniently examined, and a prolonged examination can be made without fatigue to the observer. The ordinary diffused light of a bright day affords ample illustraticn with all the objectives except the half inch. For this we need direct sunlight. If the examination be made at night, or in a dark place, the light from a Tobboed, or other good illuminator, concentrated upon the object, with a mirror or bull's eye condenser, will answer every purpose."

MEDICAL GLEANINGS.

Treatment of Cholera (*The Practitioner*, July, 1875).—Surgeon A. R. Hall, presuming the morbid state against which we have to contend in the collapse of cholera to be one of asphyxia, caused by spasms of involuntary muscular fibres, due to a condition of the hyperactivity of the sympathetic nervous system, asserts that the logical inference distinctly points to the exhibition of a remedy calculated to neutralize this condition. Such remedies are to be found in a class of agents which directly depress the activity of the muscular fibres of the circulatory apparatus. As medicines given by the mouth are generally immediately rejected, hypodermic injection is the best method of administering the drug used, which should be a pure sedative, chloral hydrate being the most efficient. It should be given in a solution of the strength of one part of the chloral to ten of water. Mr. Hall mentions nineteen cases treated on this plan by an Indian surgeon, seventeen of which recovered.

Condition of the Blood-Vessels in the Brain of the Insane (*The Dublin Journal of Medical Science*, June, 1875).—Dr. Atkins, having reviewed the morbid changes found in the cerebral vessels of the insane, portrays as follows the clinical effects which accompany and are caused by these changes. Starting with the condition of dilatation, we can at once see

that, should active arterial hyperæmia be the initial cause, over-nutrition of the brain-cells will take place, exaltation of function will follow, the ideas will flow free and fast, fancy will be excited, imagination aroused, motor impulses become uncontrolled, and acute mania will be the result. Should this active hyperæmia change to passive congestion and stasis occur, a lowering of nutrition takes place, depression follows exaltation, the ideas become slow and shallow, indifference succeeds excitement, emotion becomes impeded and sluggish, and secondary dementia gradually supervenes. Should stasis persist, organ.c changes in the cell-elements ensue, blocking up of the outlets for waste products follows, resulting in the infiltration of these products into the tissues, apathy sncceeds indifference, consciousness and volition are gradually abolished, the calls ot nature neglected, and the unfortunate sufferer sinks into a state of hopeless fatuity. Years may elapse between these different stages, or the progress may be in the reverse direction,—towards health and recovery.

Sleeplessness (*The Lancet*, July 31, 1875).—Dr. George Johnson, in a lecture on the effects of overwork and mental anxiety, alludes to the sleeplessness and anorexia which are almost invariably caused by these conditions. He says it is not always easy to determine whether the loss of appetite is a direct result of the nervous excitement, or whether the restlessness is a result of the diminished supply of nutriment to the brain; but that it is probable that the two conditions have a mutual influence upon each other. In cases resu ting from over-work, he has observed in numberle s instances that a man who has been more or less restless for many months, and who, during that time, has had a loathing for food, after taking a grain of opium at bedtime for a few nights sleeps soundly for several hours, and then wakes with an appetite. This tends to prove that in such cases the derangements of the nervous system are first in order of time and importa ice.

In cases of delerium tremens the reverse is true; the delirium, wakefulness, and other evidences of nervous disorder are directly due to malnutrition of the brain, and, in spite of all treatment by drugs, will continue until a certain amount of nutriment has been absorbed. In these cases the substitution of narcotics for food has often been attended with rapidly fatal results. We see, then, that in delirium *a potu*, sleep follows, and is favored by taking food; in cases previously nervous, the soporific effect of opium or chloral procures sleep, and then restores the appetite and assists digestion.

Correspondence.

CINCINNATI HOSPITAL.

Jones Station, O., Aug. 20, 1875.

Hon. M. B. Hagans, *Member of the Board of Trustees of the Cincinnati Hospital*:

Dear Sir:—In your letter to Dr. Thacker, in the last number of the Medical News, you say, "I fully recognize your right to criticise the management of the Cincinnati Hospital, and will not only be the last person to complain of fair and just criticism, but will endeavor to profit by it."

You will remember, my dear sir, that month after month, for years past, criticisms on the management of this institution have appeared, and, I regret to say, you have not been profited by them. Indeed, instead of en-

deavoring to shape the action of your board so as to make it conform to to the demands of justice you have suffered it to grow from bad to worse. So remarkable has been your action that you dare not attempt to defend it.

I am aware that in one or two instances your board has changed its policy after its action had been severely criticised in the MEDICAL NEWS, but it is not certain that the criticism had so much to do in correcting the wrong as the fear of an injunction which you will remember was threatened. I now allude to the effort made by your board to establish a dispensary, and make it a part of the hospital, and to organize in the hospital two grades of instruction. The former of these schemes, as you very well know, was without authority of law,—and if the law had permitted your board to create a public dispensary the sanitary arrangements of the city did not require it. Indeed, the scheme, though ostensibly for the benefit of the out-door poor, really was to make place for the sons and other relatives of your board and its staff. The latter was a scheme to take from the students attending the colleges money to put into the pockets of the staff.

Now, my dear sir, no one knows better than yourself that the law says the staff shall serve without compensation, but so greedy for gain were those members of the staff that they could not see that such teaching was in violation of law. When they insisted, and your board permitted them to go on in this way, you did not raise your voice in opposition. As regards this effort to rob college students for the benefit of the mercenary members of your staff, you did not profit by the criticisms. But so apparent was your contempt of law in the one case, and the violation of it in the other, that when an injunction was threatened, your board abolished the dispensary in the first instance, and in the second retreated from its action.

I could go on calling attention to illegal and unjust acts of your board, which met your approval, notwithstanding the severe criticisms they received, but I prefer to let them remain with the dead past, and call your attention to "a fair and just" criticism on the formation of the hospital staff. This criticism has been presented to you time and again, but like all the others in the past it has not been profitable to you. The wrong still exists, and you make no effort to correct it.

That the hospital is eleemosynary in its designs no one will deny, but it is equally clear that one of its organic purposes is medical education. Forty years of its history declare that it was made to enable college professors to demonstrate, at the bed-side of the sick, the didactic lectures they had delivered in the college halls. This being true the law creating your board and giving it the power to dismiss the faculty of the Medical College of Ohio from the hospital staff cannot be construed to give your board the power to take the clinical facilities of the hospital away from the colleges. The law was evidently intended to permit your board to appoint on the staff professors from all the regular medical colleges. The clinics of the hospital were to be the property of all the colleges,—not of one or two, but all in the city. If, then, the colleges have rights in the hospital, are not their rights equal? The law makes them equal so far as to the admission of students, and equity makes them equal as to the representation of college faculties on the hospital staff. What right, then, has your board to use the hospital to build up one college and to tear down another? Why did you at the last reorganization put on the staff three members from one college faculty, one from another, while you denied all representation to a third? What rights have Drs. Murphy and Mussey in the hospital which should not be enjoyed in common by other gentlemen occupying similar positions in other college faculties. These gentlemen evidently were appointed because they were members of a particular college faculty. If they

were not, then why was Dr. Mussey appointed at all, since the place assigned to him was at the time occupied by Dr. Miller, who was willing to continue? R. C. S. Reed.

Editorial.

Damiana.—Another new drug makes its appearance in Washington, the botanlcal name of which is yet unknown, "damiana" being the name by which it is known on the western coast of Mexico, where it is said to grow. It is a small plant with a white, fragrant flower; is collected for medical use in August, at which time the stems are covered with a fragrant gum. The dried leaves are small, of a pale green color, with a large central midrib, the under side of which is of a pale yellow color. The stems, as found with the sample of the drug received, are small, woody, and of a yellow and brownish appearance. The mixed stems and leaves present an appearance similar to that of coptis trifolia, and possesses a marked aromatic odor and taste, peculiar and pungent, with no taste of bitterness, very similar to the taste of many of the labiatæ. Dr. J. J. Caldwell, of Baltimore, has given this new remedy a number of trials, and in the Virginia *Medical Monthly*, in speaking of its medical properties, says: "I am well satisfied, from quite an extended experience with the tincture and extract of this plant, of its powerful influence over the urino-genital organs of both sexes, as in moderate doses it increases the flow of urine as well as the sexual appetite." Dr. Caldwell then gives the reports of several cases where its powerful aphrodisiac effects were obtained after the usual remedies, such as strychnia, phosphorus, and electricity, had failed.

Laid Over.—We are compelled this month to lay over a number of articles for want of space—book notices, editorials, and some miscellaneous matter.

Obituary.—Died, August 16th, Dr. J. D. W. Roberts, of obstruction of the bowels. Dr. Roberts was about thirty-four years of age. He was, we believe, the son of John Roberts, Esq., of Brecon, or Llancamictor, in Wales. At an early age he began the study of medicine with his uncle, a highly reputable physician of the country, and had made much progress in the science when he determined to try his chances in the New World. He sailed for America, as nearly as we can learn, from Bristol, and soon afterward enlisted as a private in the army. His natural intelligence and acquired aptitudes quickly pointed him out as a fit and proper person for the medical department, where he served with distinction for some time. On his return to Cincinnati he resumed his scientific studies under the tuition of Dr. Gobrecht. He has made many *post mortem* examinations, more than one of which have been reported in professional journals. He was a man of kindly heart and warm feelings, ever ready to do a kindness, and lavish of his skill among the poor of his neighborhood. By these he will be regretted by many a tear, and it is long before his memory will fade.

Dr. Roberts, according to the best information we can gleam, left one brother and two sisters, one of them married in Australia. The family property consisted of a farm of the probable value of £800 sterling, or $4,000, his portion of which the doctor expected to receive in about three weeks.

Dr. A. J. Miles.—We are happy to inform our readers that this gentleman has returned from Europe with improved health, after an absence of a year.

THE

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Original Contributions.

A CASE OF HEPATIC DISEASE.

Reported by J. TRUSH, M. D., Professor in the Cincinnati College of Medicine and Surgery.

On the evening of May 12th, 1875, the writer was called to see Mrs. K. aged sixty-nine years, who, it was stated, had been ailing for some time, but had been able to be about until about four days ago. Mrs. K. gave the following account of her previous state of health:

ANTECEDENT HISTORY OF THE PATIENT.

Is the mother of a large family of children, all grown up; has been for many years a widow. Lived in the enjoyment of good health until within a year or two of her husband's death, at which time she was afflicted with what the doctors called "dropsy of the womb," (probably uterine hydatids) which came near terminating her life; subsequently, she suffered several brief attacks of illness, but none of them of any particular consequence; last winter, however, she had a severe spell of sickness, pronounced pneumonia by her physician. Her convalescence at this time was exceedingly slow, extending through the entire winter into early spring. After her return to the city about the middle of April,—she having spent the winter in one of the smaller towns in the interior of the state,—her health began to fail again; she had no relish for food, fatty articles especially were distasteful to her; she had a bad taste in her mouth, and felt very tired all the time, but had been able to be about until four days ago, when she was seized with vomiting and cramping pains in the bowels; on the day following she felt better, but was somewhat feverish and not able to be up, and is very much in the same condition now. Stated further that she believed the vomiting had been occasioned by eating some unsuitable food; remarked also that, after getting up from her sickness last winter, she gained, in a short time, some sixteen pounds in weight, but since her return to the city had lost most of it again.

PRESENT CONDITION.

Patient is a large, fleshy woman, weighing at least two hundred pounds; conjunctiva and common integument are of a deep yellow color; tongue is furred and covered with a thin white coat. Suffers no spontaneous pain, except on very deep inspiration, when she experiences a darting pain in the right hypochondriac region. The epigastric and right hypochondriac regions are more than ordinarily sensitive on deep palpation; no marked

tenderness on pressure anywhere over the abdomen. Upon the right side of the abdomen, corresponding very nearly in location with the ascending colon, a somewhat irregularly shaped mass could be felt, which seemed to be connected with the liver and to extend well down into the inguinal region; another tumefaction projecting above the surrounding level, was noticed just to the left of the umbilicus, which, patient stated, was a rupture of many years standing. Found this to be correct, having succeeded in almost completely obliterating the tumor and then seeing it return again on removal of pressure. Over both these localities, *i. e.* the region of the hard mass in the right side and the umbilical hernia, found dullness on percussion. Nothing abnormal in other parts of the abdomen, nor about the chest. Pulse regular, sixty beats per minute, full but not hard; temperature normal; respiration normal. The urine, which had been reserved for inspection, was found to be very dark, almost black; the feces clay colored, soft, with an occasional harder lump. Microscopic examination of the urine did not confirm the suspicion, previously entertained, that it contained blood, there being no corpuscles discernible; chemical examination gave evidence of the presence of bile in this fluid. Patient is cheerful, thinks she will soon be up again, remarking in a playful way that she might just as well be up and about now, she only kept her bed because she was lazy, and because the girls (her daughters) would have it so; she had no need of a doctor, and it was only to please her children that she consented to have a physician. Being questioned in reference to the time when the jaundice first made its appearance, the patient as well as her friends stated that this discoloration had not been previously observed by them at all. With these facts before me, there being no evidence that the jaundice antedated the attack of vomiting above alluded to, and this seizure presenting very nearly all the characters of an ordinary acute gastro-duodenal catarrh, the diagnosis arrived at was: "jaundice from obstruction," due in all probability to catarrhal inflammation of the mucous membrane of the bile ducts; this latter, the result of a previously existing catarrhal condition in the stomach and duodenum. Ordered mercurio-resinous cathartic, to be followed by effervesing citrate of potassa, in tablespoonful doses, every two or three hours.

Next day, May 13th, the patient felt better, bowels had moved two or three times; the dejections were said to have been of a darker color; the urine not quite so dark. Neutral mixture continued. May 14th.—Patient decidedly better, had been up part of the morning; hard mass in right side seemed to be smaller and less irregular in shape. Patient being very much opposed to taking medicine, ordered simply a little quinine as a tonic, light diet and weak lemonade as a drink, and discontinued my visits.

On May 17th, passing by, called on my patient; found that she was not so well as she had been three days ago; the symptoms being very much the same as on first visit. There had been no vomiting, but the patient was nauseated at times, was greatly annoyed with flatulency; believed she had had a little fever during the previous evening; bowels had not moved since operation of the purgative.—Ordered a pill, composed of blue mass and taraxacum, each gr. ij; podophyllin and ipecac. each gr. $\frac{1}{8}$, every four hours; also small doses of acetate of potassa and sweet spirits of nitre likewise every four hours, and as a drink cold infusion of wild cherry bark.

May 18th.—Condition of patient unchanged, bowels had not moved. To take one or two seidlitz powders and afterward continue medicine of yesterday. May 19th.—No apparent change, although patient says she feels better in every way, except that "the medicine had brought on piles."

There were no external piles and no other evidence of internal piles than moderate tenesmus when at stool, neither did it seem at all probable that the medicine taken had anything to do with this irritation of the rectum.

Began now to doubt the correctness of my original diagnosis and expressed the belief (to a son of the patient) that in all probability there was some more serious obstruction to the flow of bile than mere swelling of the mucous membrane of the gall ducts, also that this obstruction stood in a causative relation with the rectal tenesmus. Patient not being willing to take any more medicine and insisting on being permitted to try her battery, an induction apparatus,—having unbounded faith in the powers of electricity—she was allowed to do so, and thenceforth subjected herself to electrical treatment during the next succeeding ten days. Saw her two or three times during this period, always expressed herself as feeling very much better and was of opinion that the jaundice had greatly diminished. This evidently was a mistake, if any change had taken place in the color of her skin, it was for worse, not for better.

May 29th.—Patient is forced to admit that she is not so well. Heretofore she had been able to eat a little, now she experienced a loathing for everything in the shape of food. The sensitiveness to pressure in the epigastric and right hypochondriac regions was decidedly more pronounced, but patient still suffered very little spontaneous pain. Bowels had been moved almost daily, but the stools had not changed in character, they were persistently clay-colored; the urine was still very dark, containing bile pigment, abdomen slightly tympanitic; patient felt that she had lost strength, also reported that she had had "cold spells" two or three times during the ten days, and afterwards had been somewhat feverish. The temperature and pulse had been noted several times during this period and daily while under my treatment; at no time did the mercury mount beyond 101 in the axilla,—being mostly under 100,—and the pulse ranged between sixty and eighty beats per minute.

June 1st.—Patient's son-in law, the physician who had treated her last winter through the attack of pneumonia, having been informed of her illness, came to render assistance. From Dr. C. I now learned that patient was already slightly jaundiced when she left his house in April last, further that she had subjected herself to electrical treatment months ago with great perseverence, and, as it appeared, without benefit. Was also informed that patient had had "bilious" attacks before this, and that large doses of calomel had always relieved her. Dr. C. being strongly in favor of administering the calomel again, I assented and the patient received accordingly three five grain doses of this drug, at intervals of three or four hours, also some quinine to support her strength.

June 2nd.—Dr. C. who had remained with his mother-in-law, reported that the calomel had operated, and that the stools were bilious. Patient had however been excessively nauseated, and had vomited several times; she experienced also some spontaneous pain in the region of the liver and epigastrium. The sensitiveness to palpation over the localities had considerably increased; temperature and pulse unchanged, *i. e.* the former ranging between 99 and 101, and the latter between 70 and 75. It became now quite evident that some kind of inflammatory process was in operation in the liver, but as the bile "was coming away," it was agreed to repeat the calomel on the fourth of June. Dr. C. being compelled to return home, I again took sole charge of the case. Somewhat to my surprise I found on inspection, that the urine and feces were unchanged; the feces being clay-colored and the urine almost black. June the 4th.—Patient according to agreement again received three five grain doses of calomel. June 5th.—

Bowels had moved and stools were clay-colored as before. Pulse now ranged between eighty-five and ninety and was at times a little irregular, temperature unchanged. June 6th.—Patient had had one small discharge from bowels early this morning; is very poorly, strength manifestly failing. During the day the pain and meteorism which hitherto had been slight, became rapidly augmented in intensity, the patient towards evening complaining loudly of her sufferings. Anodynes—morphine and chloral,—and small enemata of turpentine emulsion were consequently administered with a view to relieve both the pain and the meteorism. June 7th.—No evacuation from bowels since yesterday morning; abdomen still more distended and pain more acute so that larger doses of anodynes were requisite to render the patient half way comfortable; no material change in pulse and temperature had taken place, and pulse being ninety to ninety-five per minute, and the temperature silghtly less than one hundred and one. Patient vomits occasionally. Anodynes continued and about four ounces of castor oil and one drachm of turpentine ordered to be taken at two doses at intervals of three hours.

June 8.—Patient's condition materially worse, had not slept any last night, bowels had not moved, vomiting was of more frequent occurrence. Pulse was now up to 100 per minute, temperature in axilla 99. Continued chloral and administered large enemata of emulsified castor oil with a little turpentine. 4 o'clock P. M. of same day the pulse had lost considerably in force and fulness since morning, but was unchanged in frequency; in other respects no change; patient now referred her sufferings mainly to the epigastrium; was perfectly rational. Dr. D. D. Bramble called in consultation at 7 o'clock P. M. Pulse had lost in force during last three hours to an alarming degree, being now very feeble and 112 to 116 per minute; vomiting frequent. The symptoms during last two days having pointed strongly to some mechanical obstruction in the bowels, Dr. B. carefully examined the umbilical hernia and other parts of the abdomen, (as I had done repeatedly during this time), for some evidence of the supposed obstruction of the intestinal tube, but without being able to discover the cause thereof; the umbilical hernia being reducible as it always had been, and no other rupture existing. Decided to give patient croton oil and ordered six drops of the oil made into six pills, one to be taken every hour until bowels moved, or until four were taken and retained; to continue the use of anodynes as required. Should have stated that the patient during the entire period of her illness had been nourished as carefully as possible, having been abundantly supplied with beef-essence, eggs, milk, cream, and farinaceous substances variously prepared; also a little brandy with water whenever indications seemed to call for diffusible stimulants.

Midnight—Radial pulse could not longer be felt, feet and hands were getting cold; had ceased to recognize her friends. Pills had not operated; enemata given during forepart of the night were not retained. For last two or three hours had made no complaint. Died at 1½ o'clock A. M., June 9th, 1875.

AUTOPSY—By Drs. D. D. Bramble, J. A. Thacker, and the writer—ten hours after death.

Rigor mortis was feebly expressed, integument of a deep yellow color; body appeared well nourished; abdomen distended and moderately tympanitic. Section of abdominal walls—from ensiform cartilage to symphysis pubes—revealed an enormous deposit of adipose tissue, measuring in thickness, near the pubes, fully four inches, and at least two inches near the ensiform cartilage. On cutting through the peritoneum a small quantity of gas escaped rom the abdominal cavity. The umbilical hernia, which was now ex-

amined, proved to be entirely omental. The intestines, both large and small, were considerably distended with flatus; the peritoneum, at various points, showed signs of incipient inflammation. In the upper part of the abdominal cavity about a pint of clotted blood was found and removed. The liver was perceptibly enlarged, and presented a spotted and nodulated appearance, the nodules being whitish elevations of varied magnitude. On raising the liver and bringimg the gall bladder into view, this organ was seen to project beyond the lower border of the liver to the extent of at least six inches, being enormously distended, and very tense. While thus manipulating the liver the fingers readily penetrated its substance, bringing to view a white granular surface, and causing a thick white fluid to ooze out from these lacerated parts, as well as from another large rent situated in close proximity to the transverse fissure; this latter lesion evidently was an ante-mortem production, being partly filled with coagulated blood, and these coagula being in immediate connection with those found in the free abdominal cavity. A closer inspection revealed the fact that an immense abscess occupied the greater part of the interior of the right lobe of the organ. On cutting into the white nodular projections, previously alluded to, these also were found to represent so many abscesses, containing, as did the large central abscess, a (comparatively) small quantity of very thick pus and a considerably larger quantity of a white, exceedingly friable, granular substance; evidently nothing more nor less than hepatic structure in various stages of purulent liquefaction. After carefully laying open the entire gland, it was ascertained that of its right lobe only a thin layer upon its convex surface presented anything like the appearance of normal hepatic structure, and even this rind was perforated, as intimated above, at various points, by the smaller abscesses; the entire interior being completely disorganized, save here and there a process in the shape of an imperfect partition between collections of pus—probably originally distinct abscesses. The left lobe was found to be in a similar condition, with this difference only, that the exterior crust of normal structure was considerably thicker than in the right lobe. But, all told, there could not have been more than about one-fourth of the entire organ in anything like functionating condition. Two small gall-stones also were found in the depths of the organ; one in the right lobe in the region of the hepatic duct, and the other in the main bile duct of the left lobe. The gall bladder was next removed, and, being attached to disorganized hepatic structure, was easily lifted from its bed without the use of the knife; in thus removing it, however, several pieces of hepatic substance—as it was thought—remained attached to the bladder, especially at its upper extremity. On dissecting away these redundancies it was discovered that the great mass at the head of the bladder presented none of the characters of hepatic structure, but those of very dense connective tissue—such it undoubtedly was. Within its substance it harbored the three principal bile ducts—the cystic, hepatic, and common ducts. In the center of this mass, as near as could be determined, the commencement of the common duct, another concretion was found, much larger than those removed from the substance of the liver, being nearly round, and measuring fully 1½ centimeters in diameter, and weighing 33 grains; its stucture, externally, very soft and easily broken up with the finger nail. This stone rested in a complete sack, or cyst, seemingly an outgrowth from the side of the tube, but at the same time entirely and thoroughly occluding the passage, the caliber of the duct on either side of the stone being much smaller than the diameter of the concretion. The gall bladder, as already remarked, was of unusual dimensions, measuring eight inches in length and nine inches in circumference. Not a drop of bile

could be forced out even with considerable pressure, so long as the concretion just described remained in position; after its removal the flow was free enough. The liquid contents of the gall bladder were of a dark greenish color and grumous character, and measured 9½ ounces; besides this, the bladder contained a considerable quantity of a friable semi-solid substance,—believed to be inspissated mucus with an admixture of the solid constituents of the bile,—which adhered to the walls of the organ; finally, at the bottom of the bladder, a fourth, still larger, gall-stone was found. This stone was of an oval shape, slightly flattened from side to side, and measuring 3 centimeters in length, and 2½ centimeters in breadth, and 2½ centimeters in thickness, and weighing 183 grains.

The intestines, aside from signs indicative of congestion, or incipient inflammation, presented no pathological conditions; especially did this examination fail to develop the cause of the obstruction, which seemed to have existed during the last two days of life, unless the hard mass, which has been described as surmounting the neck of the gall bladder and enveloping the bile ducts, pressed upon the duodeunm with sufficient force to obliterate its caliber.

The spleen and kidneys were to all appearance healthy. The other organs of the body were not examined for want of time.

REFLECTIONS.

The case whose clinical history and more important post-mortem conditions have just been detailed, presents several points of interest, and certain queries naturally suggest themselves. Thus it would be interesting to know: What was the primary cause of the jaundice, observed, as stated by Dr. C., several months previous to the "supposed" supervention of the last illness? What occasioned the more violent symptoms which inaugurated this last seizure? Did the disorganization of the liver, as found after death and above described, take place entirely within the four weeks of the fatal illness? What occasioned the symptoms of intestinal obstruction which presented themselves during the last two days of life?

There can, of course, be no question as to the cause of the jaundice in the last illness; plainly the gall-stone in the ductus communis was the cause, occluding, as it did, this passage completely, and thus preventing the escape of bile from the organ; but it may be questioned whether this concretion was also the cause of the jaundice noticed several months previous to the last illness. If it could be shown that months ago the patient had suffered an attack of hepatic colic, that the jaundice appeared shortly afterward and had been continuously increasing in intensity, this of itself would be well nigh conclusive evidence in favor of the assumption that the calculus in the common duct had been the one original cause, but this evidence is wanting; neither the patient nor any of her friends could affirm that the jaundice had been continuous; on the contrary, it appears that for a few weeks after convalescence from the pneumonia, the patient enjoyed pretty fair health and gained in flesh. The patient had had "bilious attacks," according to Dr. C.'s statement—the symptoms indicative of the passage of a gall-stone, therefore, are not altogether wanting. Leaving the historical evidence entirely out of sight, and basing deductions solely upon the pathological status (a calculus in the common bile duct, measuring in its least diameter fully 1½ centimeters, resting in a sacculated distention of the duct; this, as well as the adjacent portions of the tube surrounded by massive layers of connective tissue; numerous hepatic abscesses; the intense jaundice present at the very outset of the last illness), and one can not but conclude: 1st, That the gall-stone in question must have lodged in the common bile duct at a time when its dimensions were very considerably

less than they were at the time of patient's death; 2d, that the presumed enlargement of the stone, as well as the enormous proliferation of connective tissue, was the work, not of a few weeks, but of months duration. The very extensive disorganization of the liver, commencing, as undoubtedly it did, in the formation of numerous independent abscesses, with subsequent coalescence, in all probability, likewise, occupied a much longer space of time than the four weeks of the last illness, for with an inflammatory and suppurative process so acute as to have wrought the extensive disorganization in this brief period the attendent phenomena, especially the fever, would have been much more violent. It is consequently highly probable that the calculus in the ductus communis was deposited in this tube about the time of the first appearance of the jaundice, that for a time it pretty completely occluded the passage, then, in consequence of the pressure from behind, the duct became dilated, and a precarious communication with the intestine was once more established, only to be closed again by the massive proliferation of connective tissue, the result of the irritation set up in the duct and vicinity by the presence of the gall stone. Futther, that the stasis in the biliary passages and also in the sanguineous circulation, occasioned by the obstruction in the ductus communis, finally gave rise to inflammation at various points throughout the entire organ; this process eventuating in suppuration and the formation of numerous abscesses, at first separate and distinct, later, by reason of purulent liquefaction of the partition walls, coalescing. The acute symptoms mentioned as inaugurating the last illness, in all probability, were occasioned simply by food, inappropriate, either in quality or quantity, and giving rise to an acute attack of indisgestion, "an embarras gastrique."

The symptoms of intestinal obstruction finally can only be explained, as already intimated, upon the supposition that the hard mass which surmounted the upper extremity of the gall bladder, compressed the duodenum to complete obliteration of its lumen. Why the symptoms of obstruction should have supervened rather suddenly two days prior to patient's death, is probably sufficiently accounted for by the marked increase in the tympanites which manifested itself about the time and likewise by the active suppuration then in progress, whereby the tension in the abdominal cavity was very materially increased, both thus indirectly augmenting the force with which the bowel was pressed upon.

Selections.

ON THE ORIGIN OF LIFE.

Being a portion of a Lecture delivered before the Royal College of Physicians.

By Lionel S. Beale, M. B., F. R. S.

The far-fetched conjectures seriously advanced by some physical speculators concerning the origin of life serve to show what extreme difficulty has been experienced by those who have attempted to construct a plausible hypothesis by which the conversion of the non-living into the living might be reasonably accounted for. One great authority, dissatisfied with every suggestion, and being evidently convinced that no physical explanation of the origin of life upon our globe would ever be discovered, despairingly submits to us the proposition that life did not begin here at all, and that our earth was first peopled by the offspring of germs brought to us upon a fragment broken off from some distant orb that teemed with life. Whether even the

simplest living forms would have survived after such a ride through space unfortunately had not been determined by experiment, so the idea of our fauna and flora being derived from those of another world found little favor, and probably all who have considered the subject would now agree that it is probable that life-forms originated upon our globe, though there might be great difference of opinion concerning the precise mode of their origin.

"Evolution" is now supposed to solve the difficulty of life formation; but this term has had at least two meanings assigned to it. By some it has been restricted to the living world, while others have given to the term "evolution" a much wider signification, and have maintained that it should include not only the evolution of living forms from pre-existing living forms, but the formation of the living out of the non-living. There is, it is scarcely necessary to point out, the widest possible difference between these two doctrines; for while the one teaches that all living forms came direct from living matter, without accounting for the origin of life at all, the other is a tenet of the fiery-cloud philosophy which teaches as a cardinal point that the evolution of life is but one of the great series of changes in which the evolution of the cosmos is comprised. But surely such an idea may, for the present, be regarded as a conjecture so extravagant as to be unworthy of serious consideration. Facts are wanting, and the arguments advanced in favor of the hypothesis are such as cannot have much weight, since it has been deemed necessary to bring forward, in their support, utterances of a prophetic character.

If, then, evolution is restricted to the living world, the origin of the first living thing will still be unaccounted for. The presence of a very simple living form seems to have been assumed; but whether that being came of itself from the non-living, or arose in consequence of some prior changes, or was formed by an act of creative interference, is not suggested by the terms of the particular form of the hypothesis under consideration. Neither is the precise nature of the first living substance indicated, and we are often left in doubt whether one or two or many forms of living matter came into existence at the first formation of life.

Now, with reference to the origin of the first living matter, several not improbable suggestions present themselves to the mind, in all of which, however, it is assumed that the change from the non-living to the living was sudden and abrupt, and not gradual.

First, we may conceive that one form of living matter was produced direct from the non-living, and from this all future living was evolved.

Secondly, we may prefer to imagine that more than one form of life originated from the non-living at or about the same time.

Thirdly, we might think it more in accordance with facts to conceive that several different kinds of bioplasm originated in the beginning of an epoch of life, from which all life of that epoch was derived. New forms originating anew in the next epoch, the results of evolution from the first gradually dying out as those of the second epoch increased and became dominant. As life-epoch succeeded epoch, new forms of bioplasm may have appeared as old forms of life died out.

But the above by no means exhaust the list of what I would term the reasonable hypothesis concerning the origin of life that may at once be suggested. All of them involve in some form or other the admission of a remarkable change in capacity or power not to be accounted for by physics. In all the communication to matter of powers or forces which it did not always possess, and which, it is conceivable, might never have been communicated at all, is suggested.

Whether this communication of new powers occurred once only or was

repeated at many successive periods in the remote past,—whether it be reasonable to consider a recurrence of the process in the future as probable or improbable, I shall not now venture to discuss.

What I particularly wish we should keep before our minds is, that facts and arguments render it much more probable that the passage from the non-living to the living is *sudden and abrupt, than that there is a gradual transition or scarcely perceptible gradation from one state to the other.* I should, however, clearly state that this inference is in opposition to the views of many authorities, and in particular is opposed to the clearly expressed opinion of one of the greatest discoverers and most acute thinkers of our time, who maintains that the conversion of physical into vital modes of force is continually taking place. It is suggested that the change from non-living matter to living matter is a transition easily effected and continually occurring Of the facts in support of so startling a proposition I confess I am ignorant, nor have I succeeded in my efforts to discover any facts in the writings of those who appear to have accepted the conclusion in question, which has never failed to enlist advocates in its snpport from the time when it was believed that highly complex living forms were produced from earth or dew, to the present day, when the advocates of the doctrine are so terribly restricted in the discovery of parentless living particles.

We have now reached the point where we are brought face to face with the modern developments of the old doctrine of spontaneous generation.

I cannot but remark that the more minutely investigation is carried out, the more thoroughly and intently facts bearing upon the matter are examined the more improbable, in my judgment, does it appear that any living form should be derived direct from the non-living. Notwithstanding all that has been recently written upon this subject, I cannot but feel surprised that at this time many good reasoners should decide in favor of the *de novo* origin even of bacteria. Whether we consider the matter from the experimental side only, or study the evidence obtained in a general survey of nature, or carefully reflect upon the facts learnt from investigations concerning the properties of living and non-living matter, with the aid of the most perfect instruments of minute research now at command, or from other standpoints, the conclusion seems to me irresistible that the verdict of a jury of well-educated men would be against the direct origin of any form of living from any form of non-living.

Driven from one position to another, the advocates of spontaneous generation have entrenched themselves in the unassailable stronghold of experimental investigation. Here they may hold their own for any length of time, for no one can say what may not be demonstrated by new experiments in the time to come. Nay, although the conflicting results of different skilled experimenters, whose experiments have been conducted upon the same principles and professedly in the same way, even to the minutest details, may shake the confidence of some in the experimental method of inquiry, it is certain that the teachings of experiment will finally prevail over all other information.

But the modern advocate of abiogenesis should be skilled not only in explaining facts, but in explaining facts away. The fact that bacteria germs exist in all parts of the higher organisms, in the most internal parts as well as upon the surface of man's body, is to be accounted for by their spontaneous origin ! Although millions are to be found about the mouth and upon the surface, and it can be shown that it is easy enough for them to get from the outside among the tissues within, we are asked to believe that those inside originated there direct from the non-living, or, as

an alternative proposition, that they were derived, not from parental bacteria, but by transmutation from some of the constituents of the tissues, on the princi le that a living fungus comes not from a fungus germ, but from a dying tree. The next suggestion will be that man, after all, is but an aggregation of lower forms, peculiarly conditioned for a time, but which assume their ordinary forms when their environment shall be modified, as it must be at death.

Erroneous conclusions of many kinds have been employed as facts in support of abiogenesis. When one finds that it is believed that fungi may be developed from oil-globules and other living organisms of a much higher type, produced without parents out of organic matter, one fails to see any limit to the support that may be gained to the cause. Volumes of facts and arguments hitherto advanced in favor of abiogenesis may be republished without in the slightest degree modifying the real state of the case. What is now required is well-devised experiment, and that is all. No resuscitation of old argumeuts and doubtful facts, however ably the task is performed, will in the slightest degree increase the cogency of experimental proof, and in the absence of new experiment such facts and arguments will avail nothing.

I think we may be satisfied that before long the advocates of spontaneous generation will have to rely upon the production of the lowest organisms only. The only view in any way tenable at this time is, that such organisms as bacteria are the only ones that can, under any arrangement of conditions possible to an experimental inquirer, be formed anew, and that these alone, at any period of the world's history, sprang direct from the non-living. All are of extreme minuteness, many of the forms being so very small that they could not be identified with a magnifying power of less than eight hundred diameters. These are the smallest, simplest, and probably lowest forms of life known. That multitudes do now spring from pre-existing forms is absolutely certain, for the process can be seen. Whether some spring direct from the non-living is the question. Those that are supposed to be formed anew are very like those that have had a progenitor, and from those supposed to have been produced anew, forms exactly like those derived from undoubted'y pre-existing forms result. It cannot be pretended that new forms of existence are produced anew. No matter how the conditions are varied, the living forms supposed to result resemble known living forms, and give rise to forms of the same kind.

But, as I have before remarked, the question of the origin of bacteria can be only determined by experiment. All irrelevant considerations in favor of abiogenesis ought now to be left in abeyance. The assumed *de novo* origin is contrary to what goes on throughout the whole kingdom of nature, and the only exception which there is the remotest possibility of establishing is the spontaneous origin of some of these lower forms of life. While, therefore, it is allowable to permit ourselves to be influenced by general evidence against a new and exceptional doctrine, which a few observers seem very anxious to establish, we may fairly insist that only evidence of the most convincing and demonstrative kind should be accepted in its support. As regards the validity and reliability of the most recent experiments for and against the doctrine, I offer no opinion. Time must be allowed for others to repeat the experiments; and, for my own part, I could express no opinion unless I had been present and had carefully watched each experiment in every stage. As far as I can judge, the reports of recent results are not more convincing than were those that were adduced years ago, many of which have been discarded and proved to have been unreliable from want of care, or from defects in the method of procedure.

If the formation of a bacterium germ, direct from non-living matter, be possible, three very remarkable series of changes, as it seems to me, will have to be brought about. Whether any means will ever be discovered of effecting these changes is surely most doubtful.

First, the atoms of the non-living substances must be separated from their combinations.

Secondly, the atoms will have to be rearranged to constitute groups of which the organic matter is made up.

Thirdly, the groups of atoms must be made to live.

What facts known, I would ask, render it likely that air, rarefied or condensed, or pressure of any degree or of any special kind, or any degree of heat, or light, or any conceivable modification of physical or chemical conditions, would at the same time account for the pulling asunder and joining together of atoms, and for the conference of new and peculiar powers of growth, of movement, of division, and the formation of new substances? In short, it is not easy to conceive, in the imagination, the several steps which result in the formation of a living bacterium even from organic matter. But the first germ must have sprung direct from matter that never had lived nor manifested phenomena in a way like those of life. Let us try to imagine a living germ being produced out of non-living matter. Atoms of many substances must be conceived as separating from one another, and then recombining. Attractions and affinities must, in the first place, be overcome, then the forces that effected the change must cease to operate; and these must, somehow, be exerted again. By what means the separation of atoms is effected cannot be suggested, neither can we conceive how the atoms are caused to recombine in a definite way. The supposed phenomena would be really more complicated than I have represented; for atoms are not related to one another—atom to atom, but group to group. How the atoms are grouped, and how the groups are related; how the groups act and react upon one another, and new groups are formed; what makes the atoms combine and begin a new course which may continue on and on for ever, cannot be conceived. Upon the whole, the production from non-living matter of any living form, however simple, must be regarded as most improbable.

TETANUS.

By B. D. Carpenter, M. D.

On the 13th day of August, 1873, I was called to see Patrick Mullaney, a stout, vigorous, well nourished, Irish laborer, about thirty-five years of age. Nine days before he had forced a splinter of wood into the first joint of the thumb on the left hand. The wound was apparently well, cicatrix hard. Three days before I saw him he was taken with pain and soreness of the muscles of the side of the neck, and of the throat, and stiffness of the jaws, headache, and some soreness, stiffness, and pain of the general muscular system; was under treatment for neuralgia of malarial origin, under which all the above symptoms gradually increased until the night of the second day of treatment, when the muscular rigidity had become general and severe, with slight spasmodic action, and the jaws nearly closed. The following night I wa called in and found his condition to be great pain in the back, neck, and through from the lower end of the sternum to the back, whole muscular system firm and rigid, abdomen hard as a board, urine passed with great difficulty in consequence of spasm of the sphincter,

general spasms, body drawn forcibly backwards, considerable dyspnœa and great difficulty in swallowing, bowels costive, had slept none for forty-eight hours, and eaten nothing for twenty-four; pulse, 120, full; skin bathed with perspiration. Ordered broken ice in bladders to the whole length of the spine and head, to be kept constantly applied. Pulv. opii gr. i., sul. morph. gr. ¼., pulv. ipecac, gr. i., nit. potass. grs. viii., every one to two hours, according to symptoms. Injection of iii. ozs. of terebinth., iii. oz. of sat. tinct. assaf., in iv. ozs. of milk or beef tea, repeated every four hours, or immediately after the previous one had passed away, with milk by the mouth, the loss of teeth enabling it to be drawn in through a tube. 11. P. M., in addition to the above, hydrate chloral, grs. 30, every two hours. until three doses had been taken, if no sleep was previously obtained. 14th, 9 A. M., had slept some at short intervals during the night, two free passages of the bowels, followed by the injections, passed no urine, muscular rigidity increased, spasms not quite so frequent, but more severe; pulse, 110, dyspnœa urgent, difficulty of swallowing increased, though he had used a quart of milk during the night. Treatment continued, i. oz. hydrate chloral every night, divided into two doses. This treatment was steadily pursued, with the exception that the intervals between the Dover's powders and morphine were gradually increased as the symptoms yielded, and sufficient sleep was procured without the use of hydrate chloral after the fourth day of treatment. As the case progressed the ice was removed for short intervals according to the feelings of the patient, who was discharged as cured on the 13th day of treatment.

Though the spasms in this disease are frequent, and often without any apparent exciting cause, exciting causes frequently occur, if in no other way, in every attempt at motion on the part of the patient, such as swallowing, change of position, noises produced in the room or within his hearing, all motions in the room or within his range of vision, feeling, or hearing, unless he is at first gently and in a quiet tone made aware of the fact that you intend making them, and if they in any way relate to him obtain his consent to your doing so, will prove exciting causes; movements on your part that would, if attempted without his consent, nearly result in mortal spasms, if you will first request of him the privilege to make them, he will possibly decline; but in a few moments he will tell you to do as you desire. You may then go on and perform the most defficult and disagreeable offices toward him or about the room, and the patient will be so free from spasm while you are about them as to excite your astonishment, and almost lead you to believe that the spasms are controlled by the will of the patient, so long as you do not attempt anything more than he is expecting you to do; but beware attempting unanticipated movements, or you will divert the attention of the nervous system, and the most frightful spasm will be the consequence. This is an important point to be remembered in the treatment of this disease, for unless you can control these exciting causes, and command your own and the attendant's actions, according to the previously obtained permission of the patient, you may not hope to succeed. Above all, no person, not even the physician, must make his appearance in the sick room without being previously announced in an unexcited tone by the attendant. Nor should any person be admitted other than those absolutely necessary to administer to his wants; neither should they be admitted to an adjoining room. No unfamiliar footsteps should be allowed to fall within his hearing, which is usually morbidly acute.

In consequence of the morbid irritability of the muscles of the throat, this watchfulness must extend to attempts at deglutition as well. I recollect one case of a boy 17 years of age, who during the attacks manifested

rather more than the usual irritability of the throat, the slightest movement to swallow for the first few days producing the most terrible spasms. After this period, at intervals designated by himself, he was able to take liquids, but always with difficulty that was alarming to the attendant, from the spasmodic gulping and choking that accompanied the effort. So marked was thie at the time I discontinued my visits, that I directed his parents to not allow him any solid food for at least four weeks, although the boy was up and walking about when I left him. At the end of two weeks the improvement generally was so great, the appetite so good, and the boy so urgent, his father consented to his trying a small morsel of beefsteak, the attempt to swallow it after thorough mastication, was attended by a spasmodic contraction of the muscles of the throat, and the boy died asphyxiated at the breakfast table. The sensibility to touch does not seem to be increased in tetanus, but the muscles of deglutition are liable to be excited by the slightest contact—in this nearly resembling hydrophobia—and in many cases the slightest touch on any part of the body, if not anticipated by the patient, is sufficient to bring on the spasms. Men are more liable to this disease than females, the robust more liable than the weakly, the nervous than the lymphatic, and adults more liable than either the old or the young, excepting early infancy, where trismus nascentium frequently occurs. It occurs in all climates, but most frequently in warm, and more frequeutly in those, during the hottest months. After carefully collecting the statistics of this disease in this country, I find that nearly all the fatal cases occurred during the months of July, August, and September, both in man and other animals; further, that quite a proportion of the cases occurring during the remaining months of the year, recovered. Moist situations predispose to the disease, also heavy rains after long drouth and heat. The most frequent immediate cause is external injuries, and the most unimportant abrasion, and the most severe injury or operation may give rise to it; and there does not appear to be any relation between the state of the wound and the occurrence of the disease, nor does its accession produce any alteration in the condition of the wound or retard its cure, and in many cases it is healed and nearly forgotten before the appearance of the disease. Again, the disease may decline and cease while the wound grows every day worse and worse. The interval between the injury and the appearance of the disease varies from fifteen minutes to ten weeks. The most common period is from four to fourteen days. Exposure to cold and damp is a frequent exciting cause, also intestinal irritations; worms in the intestines is a frequent cause. We can readily understand that internal and other irritations may be the cause of this disease operating upon an active, irritable nervous system, depressed by fear, and the attack attributed to a slight wound or scratch received some time before, and vice versa, the cause may be assigned to intestinal irritation from the overlooking of a slight wound, or a cicatrix involving pressure upon some nervous filament. Without doubt, local or general irritation is in every instance the immediate cause of an attack of tetanus, and I am just as well assured that they can not become the cause without a previous condition of the system favorable to the inception of the disease. If local injury be the true and only cause of traumatic tetanus, then we should have the disease as the necessary result of some special class of injuries, and not the occasional result of nearly all classes of injuries; and until we can show that some particular class of injuries will either invariably or in a majority of instances, when occurring upon some particular portion of the body, be followed by tetanus, we should not admit that this constitutional disease, with its terrible local and constitutional symptoms, occurs without any special condition of the

system being requisite to its inceptiou. Close observation and reasoning both show conclusively that there is a tetanic diathesis, just as there is a rheumatic diathesis, and that no class of injuries will produce tetanus when this diathesis is not present, any more than that any person exposed to the eruptive fevers will contract them unless the condition of their system is such as to favor the inception of that class of diseases, or rheumatism on exposure to the causes which produce it when the conditions of the system are not favorable to its inception. If a punctured wound of some portion of the foot in a perfectly healthy person produces tetanus, or exposure to cold and damp, o. the presence of worms in the intestines, or any other well authenticated source of irritation is the sole cause then we must have the same cause always producing the same result in all healthy individuals, and if we do not we must admit the reason to be in the constitutional condition of the person. I no more profess to understand what the peculiar morbid condition of the system is that enables both small and great irritations to produce such appalling symptoms, than I do why when two persons, both to all appearances in the same general condition, are equally exposed to scarlatina, one will contract the disease and the other not, or why one person will during life suffer frequently from its poison being introduced into his system, and another will be exposed daily to its influence, resist it for a long time, and never suffer but from one attack of the disease. The weight of evidence is about equal that each depends upon some latent morbid condition of the system being present, which the presentation of a specific poison in the one case, and of some local or general irritatation in the other, renders active.

In tetanus the latent condition I believe to be a morbid condition of the irritability of the nervous system, by reason of which the local irritation is enabled to compel the nervous centres to take a magnified view, as it were, of the local injury or irritation, thus begetting in them an irritation, of which the spasms are a natural result, they being the reflex action of a morbid impression upon the cord. One evidence that this disease is irritation only, at least in its first stages in all the parts affected, is that during the sleep of the patient the spasms cease and the muscles relax, to immediately resume rigidity and spasm on the patient being aroused from his slumbers. Marshall Hall, by pinching one of the spinal nerves of sensation in a decapitated turtle, produced spasm of its whole muscular system, both above and below the compressed nerve, thus showing that the cord in its whole length readily consented to take cognizance and act upon the irritation, though applied to only one of its nerves. The same thing resulted from compressing a portion of the cord itself. In both instances the spasms of the muscles along the course of the motor nerves occurred instantaneously; as quick as thought the irritation passed from the pinched nerve to the cord, and was reflected through the motor nerves. Not unfrequently no morbid appearances can be discovered after death to which the symptoms can by any probability be attributed. Alterations of the spinal cord and its membranes are by far the most common appearances, and they have generally been traces of spinal meningitis. In some cases these appearances were more or less diffused over the spinal cord; in others they were limited to particular portions of it, while in the very great majority of instances no morbid appearances of the cord or its membranes have been detected. But no sufficient extended obsereation has yet been had to determine positively the nature of this disease, though facts sufficient have accumulated to prove that by far the greater portion of the pathological conditions described are not in most instances the cause, but rather the effects of the disease, or simply coincidences, and that its real nature is essentially

irritation of the sentient extremities of the nerves of sensation, continued long enough to affect their origin in the spine, and that the length of time that elapses between the application of the irritation and the inception of the disease, its severity and duration, or whether we have tetanus arising from it at all, will depend upon the condition of the system when the irritation is applied. If no exaltation of nervous function is present, no morbid irritability, the irritation will disappear without tetanus, no matter what is the extent of the injury or impression upon the nerves, and vice versa. But if this tetanic diathesis be present we shall earlier or later have irritation of the spinal cord, with perhaps increased flow of blood to the part. This may go no further, and we have spasm of the muscles by reflex action of the cord; and Dr. Hall's experiments upon the turtle shows us how readily the whole cord responds to irritation applied to any one of the nerves that pass off from it. Some further experiments, however, seem to be necessary to determine why it is that this response of the cord always commences at its upper portion, the motor portion of the 5th pair. This is sc nearly invariably the case that it may be laid down as a rule that tetanus will commence about the head and neck and gradually extend to include the whole body. More especially will this be true if the case be a severe one or long continued. If this irritation (and simple irritation is sufficient to accouut for the whole phenomena) be long continued, inflammation or effusion, or both, and both have been noticed, would necessarily be anticipated as a result. If it does not occur, a post mortem examination will show it, and it has in the recorded cases about as often as we find it arising in other morbid conditions from violent or long continued irritation. It is an unpleasant omission that the cures recorded of morbid appearances after death are not more minutely given as to the violence of the attack or length of time it continued, as affording some ground for reasoning upon this subject of inflammation arising from the capillary injection due to the increased flow of blood to the part, attracted there by the irritation in the organ itself. Whenever we notice morbidly increased action of the muscles, of any portion of the body, we know that the part from which the nerve is derived which supplies that part is morbidly stimulated, the degree of which we measure by the extent of the muscular manifestations. Lavrey supposed that opisthotonos and emprosthotonos occurred according as the wound was situated on the anterior or posterior portion of the body; but further observation has determined that the position of the wound is no guide to the character of the disease. It also shows that except in rare instances it begins as trismus and ends as general tetanus; and in some of those rare instances there have been found an increased vascularity of only the portion of the spinal cord and its membranes in which the motor portion of the 5th pair have their origin. This fact is in accordance with the observation that irritation of any part of the nervous substance will increase the function of the part dependent upon the part irritated. The intelligence and general sensibility are not usually affected, and the cases reported may have been the very cases in which morbid traces were found after death in the brain and its membranes, and those conditions may not necessarily have been either the cause or the result of tetanus, but an independent coincident diseased condition. Inasmuch as the characteristic symptoms of this disorder are referable to increased motor influence, we must conclude that irritation of the tractus motorius is a pathological condition necessary for the production of tetanus. A slight degree of pressure will produce irritation, whether applied to the spinal cord, in the course, or to the extremities of nerves, and we find morbid alteration or injury of either has produced tetanus. One of the diagnostic signs of

spinal meningitis is muscular rigidity and spasm, and the most common morbid lesion discovered after death from tetanus is increased vascularity of cord or its membranes. Judging from this fact, and knowing that such lesions are not positively necessary to the production of the tetanic rigidity, but that simple irritation is all that is requisite, which leaves no trace after death, it may be held as a fair presumption that this lesion when found is an effect of the disease as often as it is a cause, though its presence would be a sufficient cause. Pelletier and Bergarnaschi attributed the disease to inflammation of the nerves of the part injured, and from them extending to the cord. This can not always be the case, since we fail often to find inflammation in any of the wounded parts, and sometimes have the disease without injury of any parts, and no premonitory symptoms referable to the cord indicating such diseased condition prior to the attack, and in the majority of cases no traces after death of inflammation of the part, the cord or its membranes. Swan, having in some cases found the sympathetic nervous system preternaturally injected, thinks the various predisposing and exciting causes produce disorder of the digestive organs, which is communicated by the ganglionic nerves to the other parts of the nervous system. Either of these views are fully capable of explaining how in certain cases irritation may be induced in the spinal cord, but they do not explain why it should produce it sometimes and not at others, and why traces of such disease are not always found after death. Both are no doubt the immediate cause of the disease occasionally. The facts we have combined in this history of tetanus lead to the inference that besides the local injury there exists a peculiar condition of the system which favors the production of tetanus, and that if this condition is not present the injury is powerless to produce it, no matter what its character or extent. Else why is it found so much more prevalent in some localities than in others? following in some systems the slightest injury, and absent in others after the most extensive lacerations or punctures. It is more frequent on sea coasts, in males than in females, in low and damp situations, and in middle age than in the very aged or the very young—strong circumstances, pointing to a climatic influence. Again, it is well known that persons residing in those localities where this disease prevails, evince exaltation of nervous function, and that nervous symptoms are markedly prominent in them when laboring under fevers and other diseases which in other localities are characterized by disturbance of the circulation It is not probable that the condition of system requisite to the inception of tetanus is a specific poison, circulating in the blood as in hydrophobia, but a morbid condition of nervous system arising from a peculiarity of local atmosphere and local geology, one or both. Witness the fact that one case of tetanus occurs in about 30,000 wounds of all sorts in the city of New York, while in portions of Long Island a case will occur in less than 200, while but a few miles distant on the same island, no case has ever been known to occur For instance, the Hamptons, where it is quite frequent, is but three miles from Montauk, where no case was ever known. Again, at Riverhead, it is quite frequent; five miles to Wading River, no case has been recorded. In these localities it often occurs without any wound, from the effect of exposure as an irritant operating upon morbid nervous conditions as a remote cause. Other proofs that some such condition is requisite and always present as a precedent to its production are found in its resulting from such a variety of causes, as all character of wounds, all kinds of intestinal irritations, the presence of worms and foreign bodies, exposure, etc. While similar causes in the same localities occur repeatedly in various subjects, often repeated in the same subject, and not tetanus results. Thus, it appears that local

injury, local irritants, and local and general injuries and irritants may light up the latent cause, and thus become the exciting cause of the disease, but that none or all combined of these causes can produce it independent of the latent cause. The prognosis is more unfavorable in the traumatic than in the idiopathic form of the disease; the danger in both depends upon the frequency and violence of the spasms, the extent to which the muscular system is affected, and the character of the rigidity; the favorable indications are long intervals between the exciting cause and the accession of the disease, this proving that the peculiar morbid condition of the system predisposing to the disease was not present in a marked degree, the slow progress of the disease and the patient surviving beyond the fourth day, the muscular spasms got general, frequent, or severe, the respiration easy, and the pulse natural. The unfavorable symptoms are general spasms, quick accessions, general rigidity, rapid progress of the affection, violent paroxysms occurring frequently, urgent dyspnœa, rapid, thready, or imperceptible pulse, inability to swallow, cold and clammy perspiration, livid countenance, delirium, etc.

In idiopathic tetanus, if the patient be a plethoric one, and the pulse full, hard, and frequent, skin hot, tongue foul and dry, the treatment may be commenced by the same treatment you would give to chronic spinal meningitis, viz: Cold to the head and spine, cold bathing, warmth to the extremities, bowels open, other secretions active, Dover's powder and injections tr. assaffa. as sedatives and antispasmodics, and to allay the exalted nervous function; but you should constantly bear in mind the trivial wounds that are frequently unthought of until tetanus occurs; and the numerous sources of irritation constantly occurring in the bowels and various parts of the system, all of which are well known exciting causes of tetanus, or you may find yourselves treating as a case of idiopathic tetanus, one that belongs to the traumatic form of the disease, in the treatment of which of course one of the first things to engage the attention is the immediate cause, and its removal. For instance, tetanic spasms of the tongue and face have been relieved by removing a decayed tooth. Again, by the removal of the dens sapientia. If the disease is produced by local irritation, the utmost pains must be taken to discover it, to remove it, and to obviate its effects. If suppression of the lochia, leucorrhea, or other chronic discharge have preceded the attack, we should endeavor to promote their return, or establish some artificial drain in the adjacent parts. If worms are present, some active vermifuge should be given both by the mouth and as injections. Turpentine and yelk of egg has frequently relieved tetanic spasm. If the disease can be traced to checked perspiration, hot-air baths and diaphoretics. Wounds are, however, the most frequent cause of traumatic tetanus, and should in all cases be carefully examined, to ascertain if there be any foreign body in them; if so, remove it. My own practice has been, if no foreign body was discovered, to lay the wound open by a free and full incision, and dressing it with cotton batting, saturated with tinct. opii. The object in making the incision is to fully divide any partially divided nerve, to free any that might be included in the cicatrix, and to relieve the surrounding tumefaction which might be causing pressure upon some nervous filament. Again, if there should be inflammation of a nerve or its sheath, the local bleeding will have a tendency to relieve it; in short, in all punctured wounds. And it is in this class that I have most frequently met with the disease. It is a safe practice to make the incision and the cotton and opium application, as above directed, immediately before tetanus has made its appearance. Indeed, from the frequency of the occurrence of this disease in my former practice,

I was in the habit during the season when tetanus was most liable to occur, and when if it did appear it was most likely to prove fatal, of keeping the wounds, of whatever nature, covered with cotton or lint saturated with laudanum, and either the treatment or the absence of the peculiar morbid condition of the system allowed me to recover some very unpleasant gun-shot and punctured wounds without any symptoms of tetanus arising, or sufficient irritation of the nervous system to cause the loss of an hour's sleep to the patient. At the same time it must be remembered that the disease once called into action often continues after all local causes are removed; hence you will not stop with the proper application to remove all local irritation or immediate cause, but commence at once the general or constitutional treatment, and after using all the remedies which have hitherto been suggested for the treating of this disease, the treatment in the case reported above gave the best results in my practice.

And I have seen 26 cases of traumatic tetanus out of 37 get well. One of the fatal cases was the boy who strangled to death two weeks after being discharged cured. Another was a boy five years of age, who received a kick from a horse, crushing the outer plate of the frontal bone at the inner angle of the right eye, somewhat breaking down the nasal bones as well. He was insensible for about two minutes after receiving the injury, then gradually recovered consciousness, and was doing apparently well up to the fourth day, when symptoms of inflammation of the membranes of the brain made their appearance. In a few hours more tetanic rigidity and spasm. The little fellow expired comatose early on the seventh day after the injury.

In all the other cases no impartial observer could have found anything to complain of in the effects of treatment. It was marked as decidedly beneficial, and failed only from the impossibility of controlling it and having it applied with such method as to give reasonable hope of success. In hospital practice, and often in private practice as well, this disease will prove fatal, however well directed and effective our remedies may be; in hospitals for the reason that you can not in public wards control the inmates so as to have perfect quiet, which is the first essential in the treatment. The same thing will frequently occur in private practice, sometimes from the officiousness of friends, sometimes from the morbid curiosity of others, impelling them, at great inconvenience to themselves and manifest injury to patients, to visit them for the mere purpose of witnessing their tortures. Again it is often impossible to obtain the assistance of nurses of sufficient intelligence and determination to comprehend and carry out your directions faithfully; and so violent and deadly are the attacks of this disease, and attended by so many important circumstances, each one of itself, if neglected, capable of giving it a fatal result. All plans of treatment will occasionally fail, even without exhibiting any proof against the plan of treatment, but of want of faithfulness in carrying it out.

INDICATIONS FOR THORACENTESIS.

In a communication on the subject of pleuritic effusion (*British Medical Journal*), Dr. J. R. Wardell, of Tunbridge Wells, thus states the conditions which may be regarded as the morbid states, and the positive and negative signs, demanding the operation:

1. In all cases in which inspection and the physical signs give evidence of a large quantity of fluid, when there are symptoms of compression of the lung, and there is manifest cardiac displacement.

2. When there are urgent dyspnœa, an irregular pulse, and threatening of orthopnœa.

3. When the affected side is smooth and rounded, and the intercostal spaces are effaced or protude; when measurement proves bulging; when the dullness in the chest is complete, or demarcated, and absolute; when there is abolition of tactile fremitus; when there are broncho-phonic voice, tubular breathing, and absence of breath-sound; when the patient can only lie on one side, or in diagonal position; and when there is the hippocratic sign of succussion.

4. When the exploratory needle proves the fluid to be purulent.

5. If the heart be pushed from its normal situation, and the apex be substernal or beyond the right sternal edge, or if it be thrust toward the left hypochondrium, or if it be lost; when it becomes presumptive that the organ has been driven inward and backward; and when on the one side the liver depends abnormally into the abdomen, and when on the other side the relaxed and down-pressed diaphragm so displaces the spleen that its free edge can be felt.

6. When half the thoracic cavity is filled, and a month or so shows no proof of absorption, the longer the delay the less are the chances of expansion.

7. In those exceptional cases of double pleurisy, when both cavities become half filled with effusion, and dyspnœa shows the lung-space to be dangerously encroached upon.

8. In pulmonary phthisis, when the accumulation of serous or sero-purulent secretion causes distress, and when the other lung assumes the symptoms of bronchitis or pneumonia, the operation should at once be performed.

9. In mechanical hydrothorax it may be had recourse to, though with no object to cure, but merely with a view, for a time, to prolong life and to aid in the action of medicinal remedies.

10. In children, whose chest-walls are thin, and in whom the white tissues are more developed and confer greater resiliency to the thoracic parietes, and whenever there are certain evidences of fluid, it should without delay be evacuated.

11. In hydropneumothorax it may be generally with safety and benefit employed.

12. Pointing externally should never be waited for.

13. Under certain circumstances repeated tappings are required.—*N. Y. Med. Journal.*

ON THE PREVENTION OF MAMMARY ABSCESSES BY THE APPLICATION OF THE PRINCIPLE OF REST.

Dr. W. Bathurst Woodman read a paper on this subject before the Obstetrical Society of London (*Med. Times and Gaz.*, Jan. 16, 1875.) He had been struck with the rarity of mammary abscesses in animals, notwithstanding the forced abstinence from suckling which cats and dogs undergo from the drowning of their progeny, and in spite of the great distension of the udders of cows, mares, and other animals when driven to market, or for other reasons separated from their young. Acting upon this suggestion, he carefully abstained from those manipulations and questionable "gentle" frictions which have so long been customary in such cases, and with the most satisfactory results. Where an abscess was threatening, in place of employing liniments he enjoined perfect rest, the avoidance of all frictions

and rough handling, and of suckling for a time—if possible from both breasts, but at all events from the most implicated; the horizontal position, careful application of strips of isinglass, soap, or lead plaster, or of an air-cushion with a hole in the centre, or of bandages taking their purchase from the opposite shoulder. In addition to these measures he employed preparations of opium, belladonna, or chloroform, applied in compresses, or ice, moist warmth, and leeches; the local congestion being also relieved by diaphoretics, diuretics, and aperients—belladonna, iodide of potassium, and sedatives being given if requisite. Illustrative cases of this method of treatment were given, exemplifying its advantages.

Dr. Barnes observed that the principle of rest had long been applied to the treatment of inflammation of the breast. He himself had learned the value of it from Trousseau, when a student in Paris thirty years ago. That admirable physician taught and illustrated it with great earnestness. He placed the breast at perfect rest by carrying straps of leather spread with *emplateur de vigo* all round it, so as to lift it well up and exert constant support on the vessels. Thus œdema was prevented, and engorgement soon subsided. It must, however, be remembered that this form of pressure was ill borne in the first inflammatory stage. It was chiefly serviceable when suppuration had taken place and the abscess had been opened; the sac then rapidly closed. In the earlier stage he had seen leeches do excellent service. The pressure then must be lighter.

Dr. Ashburton Thompson said there were two modes of treatment not referred to in this paper—the administration of tincture of aconite, and total abstention from fluids during the necessary number of days. By giving minimum doses of aconite every hour he had succeeded in cutting short inflammations of the breast which there was no doubt would otherwise have run on to suppuration very frequently; indeed, in three cases out of four. In cases of still-birth he had hitherto found abstention from fluids sufficient in every case to avoid every kind of mammary disturbance. Ice was allowed in moderate quantity, and no other fluid, from the time of delivery until the fourth or fifth day, when the breasts generally return to their normal state of quiescence. He had had two cases recently in which this method of treatment had been perfectly successful. The deprivation of fluid caused but little distress.

Dr. Braxton Hicks thought the principle of rest had been gradually coming upon us for years, friction only being resorted to among the poor and ill-educated. Surgery at the present day was all tending to quietude. Manipulations only led to suppuration, and often produced the extra amount of stimulation required to set it up.

Dr. Murray observed that the application of belladonna plaster was of great service, keeping the arm at the same time fastened to the side. In some instances a slight process of friction upwards was productive of good.

Dr. Matthews, while heartily assenting to Dr. Woodman's views, thought that the public also had largely endorsed his practice, since he had observed that it was a very common proceeding to apply a large lead plaster (spread upon leather) to the breast in cases where it becomes necessary to get rid of the milk; this of course rendered friction and all meddling impossible. He had found two large and suitable handkerchiefs suitably applied—one by way of sling across the neck under the breast, the other is exactly the reverse way, over the breast, and tied around the body so as to include the breast between them, interposing a large pad of cotton-wool—to constitute a very efficient mode of applying pressure.

Dr. Edis remarked that the chief thing to be remembered was to limit the supplies, to act on the bowels, and to insure perfect rest to the mammæ.

He was accustomed to order a belladonna plaster to be applied to the mammary region within twenty-four hours of delivery, thus exercising pressure as well as arresting the secretion of milk. Abstinence from fluids and great moderation in diet were enjoined for the first few days, an aperient mixture of sulphate of magnesia and iodide of potassium being given twice or thrice daily to relieve the bowels. The shoulders should be raised, and the arms kept perfectly quiet; the upper part of the chest being only slightly covered; any friction or drawing of the breasts being strictly prohibited. Where this method had been adopted he had never seen a single instance of mammary abscess. An evaporating lotion continuously applied to the mammæ was in some instances sufficient to prevent the secretion of milk; but the pressure obtained from the plaster was of great service, and effectually prevented the employment of any friction.

OPHTHALMIA NEONATORUM.

By JABEZ HOGG, Surgeon to the Royal Westminster Ophthalmic Hospital of London.

A paragraph occupying a prominent place among "Notes on Current Topics," in the *Medical Press and Circular* of last week, taken from the *Boston Medical and Surgical Journal*, must not be passed over in silence, or it may be the means of inflicting considerable mischief on a class of the most helpless sufferers from eye diseases.

Dr. Derby, writing on ophthalmia neonatorum, says that "Dr. Williams, of Boston, stands almost alone in his condemnation of the use of nitrate of silver lotions in this complaint." This is by no means the fact; I am indeed inclined to think that Dr. Derby knows but little of the modern treatment of the ophthalmia of new-born infants, or he would not have hazarded such an assertion. At all events, he would have been aware that solutions of nitrate of silver are now placed among the bygone therapeutical agents of the ophthalmic practitioner, in not only ophthalmia neonatorum, but in most other eye affections. For my part, I cannot too severely denounce the mischievous treatment propounded by this gentleman, namely, that of daily applying a ten-grain solution of the nitrate, and if this be found inefficient, then "the stick of nitrate of silver of Von Graefe, the *lapis mitigatus*, formed with twice the bulk of nitre to one of nitrate of silver." He goes on to say, "these are not dangerous remedies." On the contrary, I beg to warn your readers against such a mode of treating this affection, as it will generally be found to lead to grave complications that always aggravate the disease and retard or prolong the cure.

I can only gather from such statements as those just quoted that the ophthalmia of new-born infants is still, as in days gone by, looked upon by some practitioners as a purulent affection, the result of a direct specific inoculation, or application of puriform matter, gonorrhœal or leucorrhœal, to the eyes, during the passage of the head of the infant through the vagina, and consequently the disease must be met as in the old-fashioned heroic calomel and bleeding days. My experience of these cases tells me this is a great mistake, for even among the poor who crowd our hospitals only a small percentage of the cases can be directly traced to a previous gonorrhœa, and certainly among the middle classes it is quite an exceptional cause, and in a great many instances it appears to be a part of the dyscrasia of the mother, for I have been called upon to treat every infant born to the same mother on the third or fourth day after birth. The disease at the outset

is nearly always a simple catarrhal affection, the result of some cold or atmospherical influence. The close a.d unwholesome air of the sick-room of the poor, and in which they are too often obliged to live and sleep, may often be the cause, or, as Dr. Mackenzie pointed out, it may be due to want of care in washing the infant—the careful intrusion of soap, or of whisky or gin, still absurdly enough often applied to the head "to keep the infant from taking cold." Ophthalmia neonatorum must be regarded in a vast proportion of cases as a catarrhal affection, requiring, if seen at the accession of the attack, the simplest remedies for its cure, the most important among which is strict attention to cleanliness, and the constant removal of the discharge from the eyes by the gentlest means as soon as it is secreted. The application of warm water alone, and when the secretion is profuse, followed by a very mild astringent collyrium, composed of alum, or a weak solution of the permanganate of potash, is all that we need apply. Should the case be neglected for a few days, and the papillæ of the palpebral surfaces and vessels of conjunctiva become swollen and injected, then a very weak solution of one or two grains of nitrate to the ounce may be occasionally instilled with advantage, but this should invariably be followed up immediately by the free application of cod-liver oil. At the same time, it is of the utmost importance to look to the quality of the mother's milk, and see that she is well nourished and properly cared for in every way. The administration of ten drops of cod liver oil to the infant is often a valuable adjunct to the means employed. On the other hand, if by any chance the medical practitioner should be induced to resort to the application of strong lotions of nitrate of silver, or the more dangerous "solid stick" of *mitigated* destructives we must except to see, in the majority of cases, the delicate epithelial and corneal layers quickly removed, and followed by chemosis and granular lids, or ulceration and opacity, with prolapse of the iris, and ultimate loss of sight.—*Dublin Medical Press.*

ON THE VALUE OF TAR IN BRONCHIAL CATARRH AND WINTER-COUGH.

By Sydney Ringer, M. D., Professor of Materia Medica and Therapeutics in University College, London; and Wm. Murrill, L. R. C. P.

The frequent and popular use of this remedy, both by the profession and the laity, in France and Belgium, led us to try its effects. Patients so susceptible to cold that they were obliged to remain indoors the whole winter, informed us that this remedy curtailed considerably the duration and lessened the severity of their catarrhal attacks, and that, by an occasional recourse to the tar, they became less prone to catch cold, and could more freely expose themselves to the weather without incurring an attack. It will be seen that our observations confirm these statements.

We employed tar in two grain doses, made into a pill, every three or four hours. From October to January, inclusive, we carefully watched its effects on twenty-five patients, whose ages varied from 34 to 70, the average being 44. All these patients had suffered for several years from winter-cough, lasting the whole winter. They were out-patients, and visited the hospital weekly, or oftener. Most of them were much exposed to the weather, while some were so ill that they were obliged to stop work, and, therefore, were less exposed.

These patients suffered from the symptoms common in winter-cough—paroxysmal and violent cough, the paroxysms lasting from two to ten

minutes, and recurring ten to twelve times a day, and, in the night, breaking their rest. The expectoration, frothy and slightly purulent, was generally rather abundant, amounting in some cases to half a pint or more in the day. The breathing was very short on exertion, but most could lie down at night without propping. The physical signs showed a variable amount of emphysema, with sonorous and sibilant rhonchus, and occasionally a little bubbling rhonchus at the base.

These patients usually began to improve from the fourth to the seventh day; the improvement rapidly increased, and, in about three weeks, they were well enough to be discharged The improvement was so decided, that the patients returned to their work; even those who in previous years had been confined to the house the whole winter. The cough and expectoration improved before the breathing. In several cases the expectoration increased during the first there or four days; but its expulsion became easier, and, with the improvement in the cough and expectoration, appetite and strength returned.

On discontinuing the tar, a relapse often occurred in a week or two, and the patients returned with a request for more of the same medicine, and then, a second time, the symptoms quickly subsided. We found it useless in bronchial asthma, and its effects were more evident in cases where expectoration and cough were more marked than dyspnœa.

We have no doubt that tar is a good, useful, though, perhaps, not a striking remedy in these troublesome affections; and certainly it is more efficacious than the drugs generally employed.

It may be remarked, that tar is useful in the same cases for which the spray of ipecacuanha wine is serviceable. The spray, we find, acts much more quickly, and, unlike tar, it lessens dyspnœa even before it improves cough or diminishes expectoration.

We have this year continued to carry on our observations with ipecacuanha wine spray, and with results confirmatory of the statements made in August last. We find, however, that some patients are very intolerant of ipecacuanha spray, which causes in them a good deal of irritation, and even tightness of breathing. It is advisable, therefore, at first to dilute the wine with one or two parts of water; a precaution especially needful for patients affected with much dyspnœa, with lividity; for the spray may for some hours much intensify the difficulty of breathing and lividity, so as to alarm the patient and friends.

It may be not much out of place to mention here that, in several cases, we have found the spray very serviceable in non-febrile inflammatory sore throats, the mucous membrane being swollen and very red. We have found it useful, too, in hoarseness from congestion of the vocal cords. Where the hoarseness has lasted a few days only, or one or two weeks, the spray often speedily cures; but, where the hoarseness has persisted three months or longer, the spray even improves the voice considerably, but some hoarseness remains.—*British Med. Jour.*

EXTERNAL USE OF TINCTURE OF IRON IN ERYSIPELAS.

By Clarence Foster, M. R. C. S.—I wish to direct the attention of my medical brethren to the immense utility of the tincture of iron, locally applied, in arresting erysipelas and many other external diseases when unattended by breach of surface. In simple cutaneous erysipelas, and also in the milder phlegmonous variety it possesses the decidedly specific effect

of subduing, almost at once, the morbid action. I have applied it in numerous instances, and always with the most satisfactory results. So far as my experience goes, it is in these cases incomparably the best external remedy ever used. It seldom happens that more than one painting of the same spot is required; and, having applied it, no other external agent whatever is needed. In scrofulous swellings of the neck its discutient properties are far superior to those of iodine; and where a puerperal breast or inguinal gland in the male has threatened to end in suppuration, the early use of the tincture, every other day or so, with a camel's hair brush, has been sufficient to effect resolution, while in similar cases we find frequently that leeches, poultices and evaporating lotions fail to prevent the formation of matter. Again, this remedy may be applied most advantageously in cases of acute rheumatism, where any particular joint is especially swollen and painful, and also on the inflamed surface surrounding an unhealthy ulcer, or along the course of the absorbents when irritated by a recent, ill-conditioned wound. The well known remedy, ink, as a domestic application in ringworm, has long enjoyed a not altogether undeserved popularity, in consequence of its ferruginous ingredient. Although the external use of the tincture of iron—first introduced by my father, I believe, some five and twenty years ago—is now pretty common in West Riding, yet its great therapeutic advantages, I have reason to think, are far from being sufficiently appreciated by the profession generally, and I am fully convinced that any surgeon giving the preparation a trial will be amply satisfied with the result.—*Medical Times and Gazette.*

ON THE TREATMENT OF SUSPENDED ANIMATION IN NEW-BORN CHILDREN.

Notes of a Lecture at the Harvard Medical School, by CHARLES E. BUCKINGHAM, M. D., Professer of Obstetrics.

With some obstetricians, the condition of the new-born child, compared with that of the mother, is of secondary consequence. I confess it is so in my estimation. This is a matter which depends upon the religous views of different individuals, and of course is not to be here discussed. Both the mother and the child require attention, and you can often-times give directions for the benefit of the child while you are making the required pressure over the uterus which has just expelled it.

Sometimes the child cries lustily as soon as it is expelled. Sometimes it gasps feebly, with long intervals between it respirations, which may of themselves become more frequent and stronger, or less frequent and more feeble. It may come into the world blue and flabby, and without a visible sign of life. If there be beating of the umbilical cord, however, there will almost certainly be a gasp, and that gasp may be repeated; or if not repeated unaided, your assistance may restore the child to life. Even if there be no pulsation to be seen or to be felt, you may in some cases hear it by putting your ear over the heart. You need not trouble yourselves about a ligature upon the cord; make the child breathe. And for this it is not worth while to spend time in trying the Marshall Hall method; you have a chest to deal with which has never been expanded, and a pair of lungs which have never been inflated. Send for a couple of pails of water, one cold and the other rather warmer than it would be comfortable to take an entire bath in. A child who has never breathed, if rapidly dipped in these alternately a few times will often cry audibly. But you

must not wait for the pails of water before trying other measures to make the child breathe; if you do, it will be just so much neglect. With a dry rag over your little finger, thouroughly wipe the mucus from the fauces; that operation alone will make some children cry. Take the child up in a dry towel, or a pockethandkerchief if you have one at hand, or in anything which will keep it from slipping from your grasp; hold it with the scapulæ in the palm of your left hand, the finger and thumb embracing the occiput, which should be firmly pressed backwards; the finger and thumb of the right hand should close its nostrils. Apply your mouth to that of the child and try to inflate its lungs; you need not fear that you will blow too hard; indeed, unless you place a moderately dry cloth between the child's mouth and your own, you will find it difficult to inflate at all. But why press the head forcibly backwards? Because in so doing you close the passage of the œsophagus; and should you neglect that precaution, you would find the stomach inflated instead of the lungs, and a new obstacle thus put in the way of the child's breathing by your own carelessness.

You should inflate the lungs ten or fifteen times in a minute; and the process should be continued as long as there is the slightest possibility of life. The occasional alternate dipping will help your efforts. In some cases, a rapid and more forcible pulsation of the heart is felt by you upon your very first insufflation, and this, as a rule, will be repeated and increased in strength with every succeeding attempt, until as you take your lips away you will each time see the child gasp, open its eyes, heave its chest, and at last cry. The color, which has been leaden and dull, becomes of a positive red. The points upon which you placed your fingers, before the operation, became white, and remained so long enough to count twenty or more; but now the color returns more and more rapidly, and you will find, as the child's respirations become independent of your aid, that the color returns almost immediately on the removal of the pressure.

Be sure that all chance of life is gone before you stop your exertions; I have known an infant, who was laid aside in a sheet as dead by one of our profession, to live to adult age. So long as the breathless child is cool, if pulsation exists even to a slight degree, life is still possible. Excess of heat to such a child will diminish its chances for life. Why then, you may ask, do I dip it in hot water, as well as in cold, to make it breathe? Simply as a stimulant to its skin. It is not to be left in the hot water an instant; it is dipped in hot water for the same reason that I would spank it, or slap it with a wet towel, the object being to irritate its nervous system and make it cry.

If you will now simply wrap the resuscitated infant in a blanket, and leave him without washing or dressing or food for a few hours, he will be better off than if you weary him with further attentions.

NUX VOMICA IN NERVOUS DISEASES.

According to the *Medico-Chirurgical Review*, Dr. de Stefani does not regard nux vomica as an irritant to the spinal cord, but believes that it exerts a depressing action on the ganglionic system. As this system has numerous relations and sympathies with the cerebro-spinal, nux vomica, acting on both, relaxes the vital tension of the nerves, restores to them their natural conducting power, and also the degree of influence necessary to maintain the harmony of the vital functions of the organs. In acute and serious diseases of the two nervous systems the tolerance of the drug is

great; in chronic affections of the ganglionic system it is greater than in that of the cerebro-spinal; and in the organic diseases it is in relation to the gravity of the nervous sympathies. Intolerance of the drug is indicated by stiffness of the lower jaw and of the tongue, and some degree of subsultus in the lower limbs or in all the body. With reference to the curative action of nux vomica, Dr. de Stefani maintains that it depresses the muscular force if this has been stimulated by hyperasthenia, and stimulates it when it has been apparently depressed by the same cause; that it lowers the pulse when it is hard and vibrating, and raises it when it is small and weak; that it lowers excessive heat of the skin, and warms the skin when it is morbidly cold; that it regulates both the pulse and heat of the skin when they are variable several times in the day; that it relieves ardent thirst; that in costiveness which has resisted repeated purgatives it opens the bowels, and in some cases arrests diarrhea; that it also arrests spontaneous hemorrhage and relieves hemorrhoids; that it relaxes spasms, removes neuralgic, pleuritic, and rheumatic pains, calms delirium, and removes morbid wakefulness, or awakes patients from morbid sleep, promotes perspiration when deficient or arrests it when profuse, etc., whenever these symptoms are the results of a nervous affection. Nux vomica should not be employed in nervous affections until other remedies have failed. When its use is decided upon, it is necessary to guard against giving too small doses. The dose of the alcoholic extract given by Dr. de Stefani to subjects of middle age suffering from chronic disease is from five to ten centigrammes. In serious cases this may be raised even to thirty centigrammes, combining with it an equal quantity of extract of rhus radicans and some extract of henbane.—*Medical and Surgical Reporter.*

Microscopy.

ELEMENTARY TISSUES.

[Concluded from September Number, p. 436.]

EPITHELIAL CELLS.

All free surfaces of the body, both internal and external, are covered by a layer of cells termed epithelium. The structure is everywhere the same, although in different parts of the body they present certain modifications in their arrangement.

Epithelial cells are nucleated, and always joined by their surfaces or edges, without the intervention of any connective tissue.

There are four essential varieties:—1. Tesselated; 2. Columnar; 3. Spheroidal; 4. Ciliated. In all these forms the nucleus remains remarkably uniform in its characters. It is round or oval, and flattened, 1-6000 to 1-4000 in diameter, insoluble in acetic acid, colorless or slightly reddish in tint, and usually contains one or more nucleoli, with a few irregular scattered granules.

Tesselated Epithelium.—Scaly, lamellar, squamous, tabular, pavement, or flattened epithelium. This form of epithelium is the most common. It is found in single layers lining serous cavities, on many parts of the mucous membrane, and in the interior of blood vessels and ducts.

Upon the surface of the skin it occurs in superimposed layers, forming the "stratified" epidermis.

To obtain specimens of scaly epithelium, it is only necessary to scrape the lining membrane of the cheek with a scalpel, and place the fluid col-

lected in a drop of water on the slide, cover with the thin glass in the usual way, and examine under the high power.

Scaly epithelium, as will afterward be pointed out, is the elementary constituent of horn, nail, and hair.

Columnar Epithelium.—This variety exists upon the mucous membrane of the stomach, on the villi of the intestines, on the membrane lining the urethra, and most other canals.

It is set on to the surface perpendicularly, and may be detached in rows.

Preparation.—A portion of the stomach or intestines of any animal—sheep or pig, for instance—during the digestive process will furnish examples of columnar epithelium.

Scrape the surface of a portion of the mucous membrane of the stomach or intestine lightly with a scalpel, and place the matter thus obtained in a drop of water on the slide, apply the cover, and examine with the high power.

Spheroidal Epithelium is found in the bladder, ureters, pelvis of the kidney, and in the ducts of the secreting glands.

Preparation.—Specimens may be obtained by taking a piece of the mucous membrane of the bladder, and, scraping the surface lightly with a scalpel, the collected matter must be placed in a drop of water on the slide and examined as a covered object with the high power.

Cells are, for the most part, circular, although some are a little flattened at the sides where they are in contact with each other.

Ciliated Epithelium is characterized by the presence of fine hair-like filaments (cilia) attached to the free surfaces of the cells.

During life, and for some time after death, these hair-like bodies are in constant waving motion. They all move in one direction, and rhythmically, which gives rise to the appearance of a succession of undulations. Ciliated epithelium is found in the air-passages extending to the bronchial tubes, in the uterus and fallopian tubes, in the tympanum of the ear, and Eustachian tubes, and in the ventricles of the brain; in fact, wherever it is necessary to urge on a secretion by mechanical means, ciliated epithelium exists and performs the office of the scavenger's broom.

Specimens for examination are easily obtained, and with a little care will show the characteristic motion for some considerable time.

Preparation.—Select a perfectly fresh mussel, open its shell, and remove, with the point of a pair of small scissors, a small portion of the yellow fringe or mantle, which will be easily seen lining each half of the shell; place it, with a drop of *salt* water, on the slide, cover with the thin glass without pressure, and examine with the high power.

The cilia will be seen in a state of active lashing movement, and if the specimen has been carefully prepared this movement will continue for a long time, during which small particles of dust or other foreign matter that may have accidentally got between the slide and the covering glass will be seen driven along by the ciliary movements.

LYMPH, CHYLE, AND BLOOD.

These fluids present, in one respect, a physical uniformity of composition, consisting of certain characteristic corpuscles, distributed through a fluid medium.

Lymph may be obtained from a lymphatic vessel of any large animal, or, better still, from the thoracic duct of an animal that has fasted for some hours before death, which is ordinarily the case with animals slaughtered by the butcher.

By simply puncturing the vessel with a needle, a drop of lymph may be

caused to exude; the slide should be immediately placed on the drop, which will thus be transferred to it, the covering glass, previously breathed upon in the usual way, must then be applied, and the object examined under a high power.

The lymph corpuscles will be seen agreeing in their general characters with the white corpuscles of the blood, except that they vary much in size, and sometimes contain smaller cells or nuclei embedded among the granules.

Chyle contains, besides the corpuscles of lymph, a quantity of minute granules, forming the molecular base, which gives to the fluid its white color. There are, besides, oil globules, free nuclei, and sometimes a few red blood discs.

Chyle may be obtained for examination from the lacteal vessels of an animal in full digestion; a drop may be taken in the same manner as lymph, and examined, without the addition of water, under a high power.

Corpuscles identical with those of lymph and chyle are easily obtained for examination by squeezing a little of the juice from a lymphatic gland.

Blood Cells vary considerably in mammals, birds, reptiles, and fishes.

In order to obtain a specimen of human blood cells, it is only necessary to bind the finger a short distance from the tip, with the corner of a handkerchief, in order that it may become congested, and a slight puncture with a fine needle will cause a drop of blood to exude. As soon as it appears touch it lightly with the glass slide, breathe on the thin covering glass, and directly apply it with sufficient pressure to squeeze out the greater part of the drop of blood, so that only a thin nearly transparent film remains.

Examine with the high power, and if too many corpuscles are present, the excess must be got rid of by a repetition of the pressure. To see the blood corpuscles well, not more than twenty or thirty should be in the field at one time

The red discs of human blood are distinguished by their clearly defined outlines and dark centers. Each disc is biconcave, and hence the whole surface can not be focussed at one time; thus, when the circumference is in light, the centre, being a concavity, is dark, but by bringing the object-glass nearer to the object, the concavity is brought into focus and becomes light, leaving now the margin dark.

By moving the fine adjustment in both directions, it will be seen that the dark parts become light, and the light portions dark, as each is alternately in and out of focus.

This experiment should be repeated until the changes are perfectly understood.

It occasionally happens that the corpuscles adhere together by their flat surfaces, and look like rolls of coins; at other times, even in the same person, they manifest no such tendency, and are irregularly scattered throughout the field in the liquor sanguinis.

A single disc presents the following characters: its form is circular in all mammalia except the camel, dromedary, and llama, which have oval blood discs; in profile it is biconcave; the investing membrane is smooth, slippery, and elastic, capable of gliding readily along the vessels and altering its form to suit the caliber of the canals through which it is compelled to pass in the course of the circulation.*

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* Dr. Roberts concludes that the blood disc, like the vegetable cell, has an interior vesicle containing the coloring matter; analogous to the primordial utricle, in consequence of water occasionally causing the outer cell-wall to give way at one spot and allow a small vesicular-looking body to project, which, he thinks, is a portion of the inner sac. This appearance is very common in blood passed from the kidney in cases of albuminuria.

There is no trace of a nucleus in the blood discs of any of the adult mammalia.

In size the blood discs bear no proportion to the bulk of the animal in whose vessels they circulate.

During pregnancy, amenorrhea, chlorosis, and anæmia, and also after venesection or abstinence, the number of red corpuscles is considerably diminished.

In venous blood they are more numerous than in arterial, and the blood of the hepatic veins is said to contain the greatest quantity.

White corpuscles differ materially from the red discs; in man they are larger than the red, and have an irregular or finely granular surface. By the addition of acetic acid a nucleus is rendered visibe, and, according to Mr. Wharton Jones, if strong acid be employed the nucleus is split up into three or four parts, a delicate envelope at the same time coming into view, ultimately dissolving, and setting the nuclei free.

The proportion, in health, of white corpuscles to the red is said to be in man as 1 in 300 or 400.

Under various conditions, the relation may vary even to the extent of 1 in 1,000. The number is increased by fatty food, during pregnancy, and after venesection.

Kolliker remarks, that in the horse, "after enormons evacuation of blood up to fifty pounds," the white corpuscles become almost as abundant as the red.

In the splenic vein they are very numerous (1 in 60), while the splenic artery, according to Hirst, contains only 1 in 2,200.

In order to examine the white corpuscles, the easiest method, when they are not sufficiently numerous to be readily distinguished among the red discs, is to add a drop of water to the specimen of blood, while under the microscope; in a short time, the red discs will become indistinct, and leave the white corpuscles in possession of the field.

Besides the red and white blood corpuscles, there are certain occasional elements observed; for example, cells enclosing blood corpuscles in the blood from the spleen; pigment cells, and colorless granular cells in diseased splenic blood; concentric bodies, three or four times larger than the blood discs; fibrinous coagula; caudate cells; and free granules.

The plasma of the blood exuded from inflamed surfaces, or obtained from the "buffy coat" of blood, and allowed to coagulate under the microscope, is seen to consist of a multitude of filaments interwoven, as in a piece of felt, more or less intermixed with corpuscles and fine granules.

To preserve specimens of blood corpuscles, dip a fine needle in the drop of blood as it exudes, and draw thin lines across the slide, allow the preparation to dry, and it will remain perfect without any covering glass for a long time.

Sections of blood discs are made by drawing lines of blood with a needle over the slide, allowing the specimen to dry, and then cutting the lines across in all directions with the razor. The loosened portions can then be brushed off with a small brush.

In birds the blood discs are oval in shape and possess a nucleus which is rendered apparent by acetic acid. For examination, a drop of the fluid may be taken from a fowl or any small bird, by means of a slight puncture with a needle; the drop should be transferred to the slide, and prepared exactly as directed for human blood.

The blood discs of the pigeon, on drying, diminish in breadth more than in length, and thus appear to be elongated.

The blood of fishes has oval and nucleated discs, rather more pointed than those of birds.

Blood cells from the codfish or eel often become triangular after standing for some time.

The white corpuscles have the circular form and granular characters common to them in all animals, and vary but little in size; hence in animals with small red corpuscles they are larger, and in animals with large red corpuscles they are smaller than the red.

In reptiles generally the red blood discs are large oval nucleated bodies; the white corpuscles still preserving their invariable circular form and granular appearance.

For demonstration, the blood of the frog may be taken and prepared according to the directions previously given.

The corpuscles and discs will be readily seen if the specimen has been carefully prepared.

Changes induced in the Blood Cells by Re-agents.—Water, added to a specimen of blood under the microscope, causes the red discs to become spherical and indistinct; they are, however, again rendered apparent by a drop of tincture of iodine.

Potash darkens the color of the blood and rapidly dissolves the cell wall.

Solution of tannin (three grains to one ounce of water) added to blood causes a most peculiar change, as observed by Dr. Roberts. The cells first become spherical, and shortly a small bud projects from the outside of the cell wall; sometimes the protruded part is covered by a hood.

Similar effects may be observed in the blood of birds, fishes, and reptiles, while in addition to the projection of the "bud" from the surface, the nucleus in the interior of the cell becomes more distinct.*

Solution of salt causes the red discs to shrivel and ultimately to assume a stellate appearance.

When it becomes absolutely necessary to mix a fluid with the blood, as in the examination of dried blood, either serum, glycerine, or white of egg, must be employed instead of water for the purpose; otherwise, the change in the form of the discs, and their rapid disappearance, will render it impossible to make a proper observation.

Observation of the Blood in Circulation.—By the aid of very simple mechanical arrangements, the circulation of the blood in the smaller vessels may be readily demonstrated.

The web of the frog's foot, the wing of a bat, the tail of a small fish, or the umbilical vessel of a newly hatched salmon or other fish, easily obtained now artificial hatching is so common, will furnish excellent objects for the observation.

A small fish is most easily arranged, as it is only necessary to place a small pillow of cotton wool, well soaked with water, at one end of the glass slide, and then adjust a minnow or stickle-back so that the head shall rest on the wool; next drop a piece of thin covering glass on the thin transparent part of the tail, and place it under a low power first, using a higher one afterward if desirable.

The fish will generally lie quiet sufficiently long to permit a good observation to be made; but should it move, it is only the work of a moment to replace it, as no fastenings are employed.

Arteries will be at once distinguished from veins, by the direction of the current of blood, which, in arteries, runs *from* the larger *to* the smaller branches, and in the veins directly the opposite. Under a high power the red discs wi l be seen moving with great velocity, while the white corpuscles are rolling slowly along the sides of the vessel.

* Identical changes occur on the addition of a drop of water to fowl's blood, followed immediately by a drop of solution of magenta.

When it is necessary to make a more extended observation, the web of the frog's foot will answer best, because the part may be fixed, and the animal so placed as to suffer no injury for some considerable time.

Method of preparation.

1. Roll the frog in some wet rag and fasten it to the frog-plate or a wooden substitute, which can be easily made and answers just as well. The fastening is accomplished by twisting some tape round the body of the animal and the plate, leaving one hind leg out of the roll of wet rag.

2. Tie pieces of thread to two claws, and stretch, but not tightly, the intervening web over the hole in the plate, or piece of wood used instead, and fasten the threads by pulling them into little niches cut in the edges of the wooden plate, or by twisting them round the pins in the brass plate. The whole process need not occupy five minutes.

In order to fix the part under the object glass, a temporary stage of books may be built up or the ring of a retort stand may be fixed to the level of the microscope stage, to support the heaviest part of the animal, unless the stage has a clip sufficiently strong to bear the weight of the preparation.—*From Histological Demonstrations.*

PATHOLOGICAL SOCIETY OF LONDON.

[Concluded from page 433]

Dr. Payne.—I have very few observations to present to the Society, but I should be glad to call attention to some of the facts of morbid anatomy which are observed both in relation to certain diseases which form the subject of this discussion, and also in relation to the presence of what are called bacteria in the body. But before doing so may I be allowed to dwell upon the importance which it appears to me there is in this discussion in attempting to draw a distinction, if there really be one, between bacteria such as are found in putrefying animal substances (or, as we may call them, putrefactive bacteria), and those which are found under various circumstances in disease. Dr. Murchison and others who have taken the side of opposition to the germ theory, have seemed to consider that question as of comparatively little importance, but it appears to me that we have to consider it both in relation to the appearance of these organisms and to the effects which they apparently produce. It is of course exceedingly difficult for anyone who is not in the habit of familiarly examining structures so small to be able to form an opinion as to their specific distinctness, and therefore we may to a certain extent invoke authority; and I may remind the Society that a very distinguished botanist, Professor Cohn, of Breslau, who is, I believe, regarded as perhaps the greatest living authority on cryptogamic botany, and who, not being a pathologist, must be considered in such a matter as this to be impartial, distinctly admitted that the micrococci and other forms observed in various diseases are distinct from the forms which are observed in ordinary putrefaction; and whether these forms are, under particular circumstances, convertible into one another or not is not really of so much importance, because, as has been pointed out, these minute plants go through very often a series of transformations, but their appearance, and also the effects they produce, and the mode of life even in different parts of their life series, are very different; therefore, supposing that these were different forms and different series of development, they would still be as distinct in their effects as if they were original, untransmutable, distinct, specific forms. Then let us suppose that the ordi-

nary bacteria, such as are found in putrefactive substances, are sufficiently distinct to be recognized, it is then very interesting to inquire under what circumstances this particular form of organism is met with in the body, either during life or in death. It seems to me generally agreed that such organisms are very rarely and exceptionally found in the interior of the body (using that term in a very strict sense) during life. Dr. Bastian, in his introductory address, laid considerable weight upon the fact that bacteria are present in the healthy body in particular places, and, as he said, they are present through the whole alimentary canal; very often on the mucous membrane of the air-passages and on the skin in various conditions and on open wounds. But with the regard to the presence of such organisms in the alimentary canal, that, it appears to me, is a very different thing from their being present within the substance of the body; for this reason that man, like other animals, is a hollow animal, and the alimentary canal is in one sense still outside the body; and if we consider how frequently organisms of this kind must be present in the alimentary canal, and in such enormous numbers, especially as many animals, like ourselves, are in the habit of feeding on positively putrid substances, it is certainly clear that the mucous membrane of the intestinal canal must have some considerable power of resistance to the enterance of such organism into the blood; otherwise they would be exceedingly more common than they are. Therefore, I think, after all, it is true that, meaning by the inside of the body, the blood or the solid tissues, such organisms—that is to say, ordinary putrefactive bacteria—are not found in the body during life, unless exceptionally and rarely. Now, what is the case with respect to their being present after death? They are, as Dr. Bastian so justly pointed out, there present within a certain time, with a variable time—he said sometimes a few hours—sometimes not in any quantity till after several days. Now I will just recall to the memory of those who have made a great many post-mortem examinations, that there are some conditions in which these particular forms of bacteria are present in enormous numbers, and so shortly after death as to suggest at once that they must have been present even immediately before. There are those cases which are known as post-mortem emphysema, where the body sometimes, as I have seen it, even during a hard frost, when decomposition of the ordinary kind must have been quite arrested, swells up in a very few hours, less than six hours after death, to a considerable size, not many parts of it being filled with small cavities containing gas; and this only in the subcutaneous tissue, but more especially in the liver, spleen, and kidneys. Now, if we examine that part of the organ which is in this condition of post-mortem emphysema, we see at once that these gaseous cavities are merely developed out of pale softening spots, that the gas is produced in these pale softening spots, and that if we examine the spots, they are really nothing in the world but tissue possessed of the commonest ordinary rod-like bacteria—the ordinary bacteria of putrefaction. There is no donbt, I suppose, that the same changes are taking place in such a body shortly after death as not unfrequently take place after a considerable time. Well, what conditions give rise to this post-mortem emphysema? I think in the great majority of cases—I am not prepared to say in all, but in very nearly, if not quite in all—that I have seen there has been before death some part of the body in a state of positive death; either there has been a gangrenous limb, or some considerable extent of bruised tissue, or, as in more than one case I have seen, there has been urinary infiltration, either from rupture of the urethra or as a consequence of some operation. Well, in such a matter, of course, positive proof is not to be had, but surely what is immediately suggested by such a relation of things is this—that this portion

of the body, any gangrenous portion, any portion which has been severely bruised, is, we know, filled with common bacteria such as we find in putrefaction, and also when a part of the body, such as the scrotum or subcutaneous tissue, is infiltrated with urine from rupture, and is at the same time in communication with the air, we there find that the ordinary bacteria of this kind swarm; therefore it appears very reasonable to suppose that from that part of the body they have passed into the blood. Why, then, it may be said, did they not produce during life the same changes which they produce after death? Well, to explain that I simply accept the fact which has been insisted upon as against the germ theory—namely, that a particular kind of soil is necessary for the development of a particular species of bacterium, and possibly to some extent to determine the specific character. I suppose that these putrefactive bacteria in the healthy body can not or do not germinate or live, and that, nevertheless, when a part of the body is in a gangrenous condition, they are liable, although not certain, to be circulated through the body and to lie waiting there till death causes the change in the tissue which permits of their more perfect germination, this germination and development causing the evolution of gas and producing the condition I have mentioned. Now, if this is at all true, it will be confirmed by an observation which Dr. Bastian also brought forward, that the bacteria of ordinary putrefactive fluid may be injected into the body without causing any very striking symptoms. For instance, Dr. Sanderson finds in the putrefactive fluids he has been able to seperate the fever-producing substance from the bacteria, and finds that the bacteria are not fever-producing substances. Then we have to ask again whether the organisms—micrococci, or whatever we call them—when they exist in the body, do resemble in their history and in their associations these putrefactive bacteria.? And here I do not refer so much to their presence during life, as to the appearances which are seen in connection with them after death, because that is the occasion when I have chiefly observed them. I think it is certainly true, as was, I think, first pointed out in an emphatic manner by Heiberg, that although in many cases of pyæmia no organisms of a special kind are to be found in the blood, still they are to be found after death in those parts of the body which have been the subject of a pyæmic lesion; they are found apparently, where they can be easily traced, in the primary seat of injury or disease; and they are found also in the secondary seat of disease, being more particularly found in the issues of cells, and also in the blood. What are these organisms which are thus found, if they are organisms? They are simply spheroidal granules, which show an extreme degree of resistance to alkalies and acids, and are therefore quite insoluble in potash, and are distinguished for the albuminous granules resulting from the breaking up of blood-cells, or from fatty granules. Now if these organisms, or whatever they are, if these small particles were the same as the substances in a dead body which are commonly associated with putrefaction, we should expect that, being present as they are in great numbers, they would produce putrefaction in the parts surrounding them; nevertheless I think that is distinctly not the case. When we examine a pyæmic case after death, we do not find that evolutiou of gas, and other signs of active putrification, in the place were the pyæmic lesions occur, although on examining we have found the e organisms. Therefore I think this is a physiological proof of the truth that these, whatever they are called, are not the same as putrefective bacteria, and physiological proof, if I may say so, in addition to the morphological difference adduced by several observers. Therefore, it does appear to me one can to a certain extent trace particular forms associated with particular disease in those parts of the body where the disease has occurred, and it is not the same as common putrefaction. Now,

of course, it is easy to see this fact may be interpreted on other hypotheses. It may be said these forms are products of the desease in the parts of the body effected; it may be said by others that they are the cause of the morbid processes which have been going on in these particular parts, and there is no evidence on the face of it why one should be more true than the other. Whether there is any proof of that must come from other considerations which I do not enter into now. I would only say, in conclusion, that the argument I draw from this is not one directly in favor of the germ theory of disease, but rather directed against some of the objections to it; and to some of these I think it applies with a great deal of force, because it shows that the negative results which have been obtained with respect to common bacteria, such as those which occur in putrefaction, can not be applied immediately and certainly to the specific organisms which are alleged to be the cause of disease, and therefore many questions which have been argued and supposed to be solved with respect to putrefactive bacteria would have to be argued again, and on quite independent grounds, with respect to this.

Mr. Jabez Hogg.—I do not intend to intervene between the Society and Dr. Bastian, and I am sure we are all willing that he should have as much time as possible for his reply; but there is one fact not mentioned by previous speakers that I should like to mention for the purpose of having Dr. Bastian's opinion upon it. It has always appeared to me that pus and the lymph-cells occupy a very important share in the production of those granules of which Mr. Wagstaffe has spoken. There is one experiment that I have often repeated, and it has been repeated for me by Mr. Bell, the eminent chemist of the Inland Revenue Department, in regard to the action of pus upon the fermentable materials. I have often added (as Mr. Bell has done for me) laudable pus to sweet wort, preparations of grain and also sugar preparations, and we have obtained very active fermentation in the ordinary space of time. On all occasions the pus-cell has broken up, and produced the bodies represented in the drawing before us. Of course the result is similar to the action of yeast. There is a considerable quantity of alcohol, but only half the quantity that would be formed by yeast. We always get a certain quantity, from 7 to 9 per cent., and we have had 12 per cent. of alcohol from the action of the pus itself. I only mention this in order to hear from Dr. Bastian whether he has made these experiments, and what action he supposes the pus or lymph-cell of that kind would have upon those granular bodies, which I have myself observed repeatedly.

Mr Wenham.—As is well known, Mr. Wenham, of London, England, has contrived quite a number of ingenious optical instruments, and, in that direction, undoubtedly possesses a degree of talent; but, excepting some ability in optical mechanics, he seems markedly deficient. Mental physiologists recognize the fact that the highest development of one or two faculties of the mind is not inconsistent with so little development of all the others that they can scarcely be regarded as having an existence; and, from what we have observed of Mr. W., he affords a very good illustration. Possessing great ingenuity in inventing accessory apparatus to the microscope, he yet can not make a simple statement of a few facts correctly; and so deficient is he in reasoning powers that his judgment is entirely worthless. In verification of what we say we will quote from an article of his in the September number of the London *Monthly Microscopical Journal*:

"My attention has been called to a letter from Mr Stodder, appearing in the Cincinnnti Medical News for July last, wherein he attempts to claim pre-eminence for Mr. Tolles, and asserts that all recent improve-

ments have been taken from him. I can not reply in any of the American journals, particularly as the letter in question is such a manifest puff of Mr. Tolles' object glasses from one professedly his agent, that I am surprised at its insertion as a scientific article. Not to lose the chance that now offers, in the present small-angle controversy, Mr. Tolles is there boldly put forward as the maker of the best object glasses in the world. It is imputed that Messrs. Powell & Lealand have based their recent improvements on the fact of having seen Mr. Tolles' four-combination 1-6th (belonging to Mr. Crisp). As these gentlemen make it a rule never to answer insinuations against themselves, I venture to state that I have examined their new glass, as well as the notorious 1-6th, and am in a position to say that they have not copied, and further, that they also consider this much vaunted object glass not a subject for imitation.

"The four system combination is claimed by Mr. Tolles as his invention, but it is no novelty." etc., etc.

Now if our readers will examine the July number of the MEDICAL NEWS, they will find that it contains *no letter from Mr. Stodder*. There is an article in that number by Mr. S. reviewing the works on the microscope of Carpenter and Frey, *but there is not a single statement in it mentioned by Mr. Wenham*. Furthermore, in no number of this journal has Mr. S., or any one else, ever asserted that all recent improvements in object glasses have been taken from Mr. Tolles. Mr. Wenham can very well say that he can not reply in any of the American journals, for we do not believe that any journal on this side of the water would be willing to publish a communication by him in which statements are so recklessly made without the slightest regard to facts. It is a matter of surprise that the *M. M. J.* publishes his articles. No one possessing such a confusion of mind should ever attempt to state anything—he had better stick to his tools, and confine himself, in his attempts to immortalize himself, to them.

Mr. W. seems to be of the opinion that because Mr. S. is the agent of Mr. Tolles, no attention should be paid to any thing he might say of Mr. T.'s work. Judges and juries, however, listen attentively and respectfully, and give all due weight to the arguments of the attorney who has been paid by his client for advocating his cause. It is only a person of an illy balanced mind who will not listen to one supposed to be an interested party; and it not unfrequently happens that the former individual is an interested party himself.

With such an exposition as Mr. Wenham has made—that he can not be believed in the simplest statement of facts, and that his reasoning powers are nil, his assertion that he has examined P. & L.'s new glass, as well as the "notorious 1-6th," and is in a position to say that they have not copied, and further, that they also consider this much vaunted glass not a subject for imitation, will pass for naught with a person of sense. It may all be true, but considering Mr. W.'s mental defect, his assertion of it is not the slightest evidence of its truth.—ED.

DENIDATION.

The *Obstetrical Journal of Great Britain and Ireland* copies in full in its July number the article by Dr. James Barnsfather, in the March issue of the MEDICAL NEWS, on "What Part does the Mucous Membrane of the Uterus Take in the Physiological Process of Menstruation," and in an editorial comments as follows:

Perhaps the most satisfactory and important work connected with our

branch of medicine which has been done within the last few years, is that which has reference to the anatomy and physiology of the uterine mucous membrane. But notwithstanding all this excellent labor, the periodic changes which take place in the lining of the uterus during its unimpregnated life still remain undecided. Dr. Tyler Smith, who was one of the earliest to write upon this subject, arrived at very definite conclusions. He had examined the uteri of several women who had died during the catamenial flow, and in each found the mucous membrane of the body of the uterus either in a state of dissolution or entirely wanting. In one case, in which he was assisted by Dr. Handfield Jones in examining the uterus with a microscope, no traces of the epithelium or of the utricular glands could be found. This evidence has been corroborated and supplemented very recently by the elaborate researches of Dr. John Williams, in a paper which appeared in this journal; and further evidence confirming his views has come to us from Dr. Barnsfather, of Cincinnati.

He says that for a number of years he has been examining microscopically, from month to month, the menstrual discharges of women. From his investigations he finds in all of them exfoliation of the mucous membrane, even from females perfectly healthy. In those suffering from dysmenorrhœa the membrane was hypertrophied, and came away in larger pieces.

Dr. Aveling also agrees with these authorities, and has proposed to call this removal of the developed mucous membrane "denidation." Unfortunately, in spite of all this concurrent evidence, complete unanimity does not yet exist, for within the last few months Dr. Engleman has stated, as the result of his observations, that in not one of the many uteri he has examined, after the cessation of the catamenia, has the mucous membrane, or even its superficial layer, been wanting. He believes the tumefied mucous membrane to be removed by a gradual disintegration of its elements and rapid absorption, but admits that in some cases the entire upper stratum may be detached and expelled in toto as decidua menstrualis. He does not, however, explain why, when the normal physiological process is increased to morbid intensity, the disintegrating and absorbing process should fail in removing the developed membrane in what he believes to be the normal manner. There are at present, therefore, two contending theories—the desquamative and the involutive. None deny the existence of periodic changes in the lining of the body of the uterus, preparing it for the reception and retention of the ovum should it be impregnated—a process which, since the time of Harvey has been likened to the nesting of birds, or nidation—the point which remains to be positively decided by the repeated examinations of different observers is, the exact way in which the abortive physiological process is terminated. We commend the definite solution of this problem to our readers; at present the preponderance of evidence is with those who believe denidation to be an act of desquamation. If, however, these observers have been so unfortunate as to have always investigated uteri in an abnormal condition, and the involution theory be right, time will undoubtedly prove the fact, and determine the ultimate acceptance of the truth.

DUNKIRK MICROSCOPICAL SOCIETY.

This organization gave its first reception and exhibition at the Public Library Rooms, on Friday evening, September 10th, from 8 to 10 P. M.

A large company of members and their friends were present, and all seemed greatly pleased.

The meeting was opened with a brief address by the President, Dr. Blackham, in which he stated that the Society had been organized but little more than a year, and though the number of members was by no means large, and included many beginners, yet much work had been done as the display of objects, most of which had been mounted by members, would testify. The Society had not confined itself exclusively to microscopy, but had given attention to the study of entomology, and presented three cases of insects which had been prepared by Dr. C. P. Alling, Curator for Entomology, to illustrate the principal varieties of insects belonging to the locality, and which would be permanently placed in the Library Rooms for examination and study.

Dr. Alling then presented the cases, with some brief remarks on the study of entomology, and on the nature and habits of some of the specimens in the cases.

The microscopical exhibition proper then took place, and was very successful, several fine instruments by various American and English makers being used, with powers ranging from 15 to 1,000 diameters.

As this was the first affair of the kind ever attempted in this county the member of the Society congratulate themselves upon their success.

SAN FRANCISCO MICROSCOPICAL SOCIETY.

The regular meeting of the San Francisco Microscopical Society was held on Thursday evening, August 19, with President Wm. Ashburner in the Chair. In addition to the members, Dr. H. P. Babcock, of Oakland, and Mr. R. W. Washburn of this city, were present as visitors.

Dr. S. J. Corbett was proposed for active membership, and Prof. Thomas Price was elected as such.

Letters were received from Colonel J. J. Woodward, of Washington, D. C., and Prof. William A. Brewer, of New Haven, Conn.

Under the head of donations, the Treasurer announced that he had received the sum of $50 from Wm. Norris, Esq., one of the Society's resident members, as a contribution toward the Library fund. The announcement was thankfully received, and a vote of thanks tendered the gentleman.

Additions to the Library were announced by the Secretary in the way of two copies of *Nature*, two of *World of Science*, *Cincinnati Medical News* and *Monthly Microscopical Journal* for August, and Martin's "Manual for Microscopic Mounting."

The photo-micrographs presented at a former meeting by Col. Woodward, were laid on the table, bound in a suitable manner, and received much attention from the members during the evening.

Mr. William Ashburner donated a slide mounted by him with sand from the north shore of Great Salt Lake, which he stated were particles of carbonate of lime deposited around a nucleus, probably organic.

Mr. J. P. Moore donated three slides mounted by him dry, *in situ* and in balsam for the polariscope, with the cuticle of *Eleagnus Japonica variagata*, showing stellate hairs of peculiar character

Mr. C. G. Ewing presented a slide mounted with a species of weevil known as *Sitona lineatus*, and Mr. W .A. Woodward made a further donation to the entomological portion of the cabinet of a number of pear slugs and grape-vine beetles, which were referred to Mr. Edwards for investigation and report.

Mr. Donallan, of Healdsburg, presented what was said to be a variety of *filaria*, found in the water at that place.

Mr. Melville Attwood made a very valuable donation in the shape of twelve slides mounted by him with sections of the wall rocks and "horses" from principle gold-bearing veins of California, accompanied by the following paper on

MICRO-LITHOLOGY.

The rock sections which I now present to the Society are from specimens taken from the wall rocks of some of the principal gold-bearing veins of California.

In order to examine them I found it necessary to prepare and cut the sections myself, in consequence of which they are not so well done, or mounted, as I could wish; yet sufficient to show structure and composition.

Those that would admit of it are cut thin, to enable me to make the full use of transmitted light in their investigation, as I found that the mere inspection of the outer surface, as an opaque object, did not give the information that examination by transmitted light affords.

I believe the microscopic examination of the wall rocks of gold-bearing veins is something new, and for that reason I have brought the subject before the Society, hoping by such means to draw attention to it, and perhaps induce some one more competent than myself to carry out the investigation.

So little is really known of the origin of our metalliferous deposits, that anything tending to throw light on the subject is important, and should be interesting.

Many of the specimens from which the sections are cut, are, to the naked eye, a compact and homogeneous mass, and appear to be formed of different constituents; but, after being cut to the requisite thinness and placed under the microscope, I found them all of the same structure and composition.

I have little doubt that after a time, by the aid of the microscope, the miners will be able to distinguish the wall-rock from intruded masses (commonly termed *horse*) in the metalliferous veins, which, in too many instances, have puzzled the most experienced, and thereby led to great waste of time and money.

Section No. I. Is from the hanging wall of the Eureka vein, Grass Valley, at a depth of 400 feet.

II. Hanging wall of the Eureka vein at a greater depth.

III. Wall-rock of the Sierra Buttes mine.

IV. Wall-rock of the Indian Valley mine.

V. Wall-rock of the Norumbago vein, Grass Valley.

VI. Wall-rock of a large vein near Grass Valley.

VII. Wall-rock of a large vein near Nevada City.

VIII. Wall-rock of a large vein near Mokelumne Hill.

Most of these are diorites, consisting of felspar and hornblende, with crystals of pyritic matter; the fibrous structure of the hornblende being distinctly visible. I found the pyritic matter in every case which I examined to have gold mechanically combined with it. The eruptive basic rocks, to which this class belongs, all possess the same general structural features, which serve to distinguish them from all others. The mineral parts of such rocks are seen to be developed in more or less perfect crystals, at all angles to one another, thereby indicating that the entire mass must have been at one time in a state of liquidity, or solution (acqueous or igneous), sufficient to allow of that freedom of motion absolutely essential to such an arrangement of the particles.

Section No. IX. From the hanging wall of the Hayward mine, Sutter Creek, at a depth of 1000 feet.

X. Hanging wall of the Oneida vein, Sutter Creek, at a depth of 800 feet.

The structure of these sections very much resembles those from the wall-rock of the celebrated St. John del Rey vein, Brazil.

XI. Is a section of the Killas or wall-rock of the St. John del Rey vein, Brazil.

XII. Section from "horse" in the Eureka vein, Grass Valley, at a depth of 400 feet.

The result of my examination of the wall rocks, as far as I have gone into the matter, in a great measure confirms the views of Mr. David Forbes, expressed in a communication to the British Association in 1865 "On the Appearance of Gold on the Earth's Crust;" and in a short abstract on the same subject, but of a late publication, he says:

"With regard to the time of introduction of gold, or rather auriferous eruptive rocks, into the crust of the earth, a continued study of the subject, and the collection of more data from other parts of the world, not only confirms me in the views expressed in a communication to the British Assotiation in 1865, (a short abstract of which is given in the *Geological Magazine* for January, page 23), but makes me further believe the views therein expounded to be of universal application, and 'bearing in mind that any bed of sedimentary origin may contain fragmentary debris of any auriferous eruptive rock or vein substance which was of previous geological age'—I am of the opinion that gold is not in itself characteristic of any sedimentary stratum or formation, and when found in such beds, introduced otherwise than stated in the proviso, that its presence there is due to subsequent intrusive causes.

"My researches have led me to conclude that, universally, gold has been introduced into the crust of the earth at two very distinct geological epochs, and that in both these cases it has been carried up in direct consequence of, and in conjunction with, the outbursts of distinct and characteristic plutonic rocks."

I hope at a future meeting to have a few sections from the wall-rocks of some of the silver-bearing veins of Nevada; also, sections of the intruded masses termed "horse."

The regular meeting of the Microscopical Society, held on Thursday evening, September 9, proved very interesting.

Under the head of donations to the Library, there were received two numbers of *Nature*, two of *World of Science*, and from the publishers of the *Overland Monthly* their September number. The Secretary announced the receipt by purchase of numbers 1 to 28 of "Journal of the Quekett Microscopical Club;" "Introduction to Cryptogamic Botony"—Berkeley; "Principles of Scientific Botony"—Schleiden: "Mushrooms and Toadstools," with two charts—Smith; "Outlines of British Fungology"—Berkeley; "Mohl on the Vegetable Cell," and "Esculent Funguses of England"—Badham.

The Cabinet was added to very materially by the receipt of twelve tubes containing fluids for the micro-spectroscope, from Mr. Jos. Beck, of London; and a sample of sea dredgings from a depth of 90 feet at the Eland Islands, Gulf of Bothnia, from Dr. Harkness, and obtained by him in 1870 on a trip to Finland. Dr. Harkness also presented a large quantity of the willow fungus—*melanconis stilbostoma*—which he gathered at Santa Cruz, and which had received his attention at a former meeting. A sample placed on the stage and moistened with a drop of water discharged myriads of motile gonidia spores.

Mr. Banks brought to the rooms one of the Cox's turn-tables, which was

examined, and in workmanship and utility is considered to be a useful auxilliary to the mounter of objects.

Mr. Hanks read a short report on the cochineal insect which was obtained by Mr. Edwards on the leaves of the manzanita near Grass Valley, and referred to Mr. Hanks for chemical analysis, with the following result:

REPORT ON THE COCCUS PRESENTED BY MR. EDWARDS.

The quantity presented being very small, I requested Mr. Edwards to furnish more. This at first he thought he would be able to do, but afterward notified me that it would be impossible. I then made two experiments upon the sample I had. After drying and pulverizing I divided the minute quantity that remained into two portions. Upon one portion I poured a few drops of concentrated sulphuric acid and gently warmed it. In a few minutes the acid became intensely scarlet in color. Upon the other portion I poured a small quantity of solution of caustic soda. In this case the liquid became distinctly red in color, but not nearly as much so as in the first experiment.

From the results obtained I feel certain that the insect possesses a coloring principle, having some of the properties of that obtained from the lac insect (coccus lacca), and I think an effort should be made by this Society to procure a larger quantity for further investigation.

Mr. Kinne read a paper which deserves the attention of all our readers, and which he stated was written by request of members of the Society in order to bring the matter before the public. There are many popular errors which need correcting, and when an untruth is proven to be such, the fact should be made as public as possible. Many of the mile-stones of civilization are but the finger-posts of advances made from the legends and marvels of the past, and Mr. Kinne seems to be of the opinion that it is about time to stamp out what was shown in 1816 to be a palpable mistake, by the Mr Blackwell he mentions, and to aid the matter his paper was written.

HOW A FLY WALKS ON THE CEILING.

If any apology is needed for bringing up a subject here, where all know the truth in the matter, the prevalent opinion as to the method in which most insects climb vertical surfaces or walk on inverted ones, and the fact that books for the instruction of our children repeat the theory of atmospheric pressure, are certainly sufficient.

My attention was called a short time since, by one of my children, to a chapter in McGuffey's Fourth Reader, used in the public schools in this city, which, besides its legitimate duties as a reading lesson, is intended to impart in an interesting manner some entomological ideas which are not borne out by the facts in the case. I well recollect the delight with which I read the same article when a boy, and it required the scientific literature of later years, and personal observation with the penetrating and powerful eye of the microscope, to teach me the truth, yet I should have supposed that the compiler of any work professing to teach a grain of science would have seen to it, that they did not gather up and promulgate the hasty and erroneous notions of others that have long since been rejected.

Years ago, Mr. Blackwell's simple, yet conclusive experiment of placing a number of flies in the glass receiver of an air-pump, exhausting the air and yet witnessing them perambulating up the sides and along the dome, has been often repeated, and of itself, explodes the theory of sucking disks. Bearing in mind the truth of the saying, that "seeing is believing," I have recently taken the trouble to test the truth of Mr. Blackwell's experiment, through the kindness of Mr. John Roach of this city, who placed his instruments at my disposal, and assisted in the trial. Exhausting the air so that

but half an inch of mercury was left in the tube, the flies placed in the receiver were seen walking about at the top of the chamber as well as before the air was withdrawn, though if they attempted to take to the wing they would drop like bits of lead. Before the air was so entirely rarified, their endeavors to fly from the bottom resulted in little hops and jumps that were quite amusing. After a few moments the insects became insensible and their bodies swollen to the point of bursting, from internal pressure, while an influx of air would revive them for a repetition of the experiment, which was continued long enough to prove to a certainty that, while the little prisoners could not fly about in the receiver, without the air, they could walk as surefooted as ever without the pressure incident thereto.

The microscope, in the hands of intelligent observers, soon revealed the apparatus with which the fly was enabled to defy all the laws of physics, and, as all present may not have made a personal examination of the matter, feeling to rely upon the statements of Blackwell, Lowne, Hooke, Gosse and others, I have placed the foot of a common house fly in the compressor, and a living fly in the live box, with its feet toward the cover.

Examining them with moderately high powers we see two membranous cushions or palms (*pulvilli*) between the hooks on each, covered with minute hairs, each terminating in bulbous extremities, from which exudes a viscid, tenacious fluid. As the fly endeavors to free itself from its close quarters, you will notice the tenacity with which each individual filament clings to the glass cover, and that they are sent backward along the line of direction in which the foot is being slowly withdrawn, much in the manner that the bristles of the brush are bent when it is drawn along some hard surface. When the foot is suddenly lifted, you may see a dotted pattern of the pulvilli marked on the glass in the fluid left behind from the extremity of each hairy filament. From the results of a series of varied and long continued experiments, all of which point to the same end, it is now conceeded that these hundreds of microscopic points, clothed as they are with a glutinous substance poured out in minute quantities, are the organs of adhesion. When all the hairs have the strain on them they suffice to support the insect, but each row may be removed separately, and it is done by the manner in which the tarsus is raised. The two little hooks or claws aid no doubt, very materially, in traversing surfaces that are apparently quite smooth, by grasping irregularities we can not notice; and by drawing a fly backward upon the hand, we perceive by the senses of both seeing and feeling, that they take hold quite effectively.

The sucker-like disks on the males of a genus of insects known as Dytiscus, of which it has been held with even greater appearance of truth that their adhesive power is due to atmospheric pressure, Mr. Lowne has successfully shown are nothing more than remarkably developed pulvilli, and from which exudes a fluid similar to that secreted by the fly and other insects, but in much larger quantities.

It is hardly worth while to say more on the subject, as it would be going over a mass of details which are familiar to you all; but with the fact so patent to every one that the ideas absorbed by the youthful mind regarding the science of common things are more lasting than any other, and feeling that it were better not to teach a proven falsity to the thousands of our school children, it seems to me that some steps should be taken to so correct this popular error that James, William and Harriet of to-day may not be confused with untruths, taught them but to be unlearned in latter years.

The objects exhibited as stated met the case fairly, and the foot of the living fly was finely shown. The speckled pattern of the pulvilli showing plainly where each separate filament had rested for a time, was noted by all,

and the regular disposition of the dots commented on. Acting upon the suggestion contained in the latter part of the communication, a resolution was adopted that the Corresponding Secretary address the publishers of McGuffey's Readers, calling their attention to the matter, and requesting that the chapter referred to be omitted from the book in future. Some of the members seemed to be of the opinion that our school teachers could mention the matter in their object lessons, and thus aid to correct the statement at once.

Correspondence.

Hotel Royal, Edinburgh, Scotland, Aug. 7, 1875.

DR. J. A. THACKER, *Dear Sir:* It was with great pleasure that I attended the Forty-third Annual Session of the British Medical Association, held in this picturesque and *queen* of European cities. Great pleasure, in the first place, from the fact that I not only saw and heard, but made the acquaintance of many of the most distinguished men of the day; and secondly, because it brought me to the Edinburgh University, one of the most renowned medical colleges of the world, and on the field where so many medical men have, by their labors, done so much, and are still doing so much, to develop medical science, and elevate medical teaching.

Here was the scene of the labors af the great anatomist, Alexander Monroe, who began teaching anatomy, demonstrated by dissections, in the year 1720, and continued for a number of years, being succeded by his son and then by his grand-son in the same department, the three occupying the same position for a period of 125 years consecutively. Besides the Monroe's may be recorded the names of many distinguished Edinburgh anatomists, who are, for their scientific investigations, honored the world over. Of these we may enumerate the names of John Goodsir Drummond, Dr. Nasmyth, Sir Chas. Bell, John Bell, John Gordon, Barclay, the famous Dr. Knox, John and Alexander Lizars, Sharpey, Handyside, Allen Thomson, Mercer, Dr. Lonsdale, Wm. Turner, Struthers, and Mr. Spence, now Professor of Surgery.

But there are names of those in other departments of medicine, who have been in the Edinburgh Medical School, and who by their research are familiar to every student of medical literature. Conspicuous among these are William Cullen, who was first appointed Professor of Chemistry in 1755, and soon after this becoming clinical teacher of medicine, which position, no doubt, the better fitted him to develop that great system of the classification of disease for which he is so justly celebrated. Before this time diseases were classified in an arbitrary manner, and clogged with scholastic verbiage, that added to their obscurity, but which Cullen's clear and systematic mind reduced to order. Associated with the name of Cullen are the great names of Gregory and Abercrombie; we also might add Dr. Rutherford, the two Duncans, and Craigie, all distinguished physicians and writers.

Physiology has been much indebted to Edinburgh men, and in this connection we may mention the names of those that will always be linked with the science, Robert Whytt, Sir Charles Bell, John Fletcher, Allen Thomson, Martin Barry, John Reid, and lastly John Hughes Bennett, the distinguished teacher of clinical medicine.

In the roll of Surgery we call to mind the names of the three Bells, Robert Liston, the most dexterous operator of his day, James Miller, James Syme, and James Spence, the present distinguished Professor of Surgery.

Obstetric science is especially linked with two great Edinburgh names, those of Hamilton and Simpson, now passed from their labors; and, I might well add two more now in the field, Mathews Duncan and Alex. Simpson.

I must not forget to mention in this very imperfect list of distinguished men, the names of two that were so active in this Association, Sir Robert Christison, the venerable and distinguished President of the Association, and Dr. Warburton Begbie. There are many names that have been connected with Edinburgh schools I have omitted, those that are familiar to the scientific physician, such as Alison, Edward Forbes, Belfour and others, but this omission can be attributed to writing a hurried letter in my hotel-room, without books or a library for reference, merely giving a few spontaneous thoughts crowding upon me while in this great medical center.

The officers of the Association were: President, Edward Copeman, M. D., F. R. C. P.; President Elect, Sir Robert Christison, Bart, M. D , D. C. L., LL. D. F. R. S. E., F. R. C. P. E.; President of the Counsil, Francis Lilison, M. D., F. R. S.; Treasurer, R. Wilberham Falconer, M. D., D. C. L.; General Secretary, Francis Famke, Esq.

The Society is divided into six working sections, viz: Medicine, Surgery, Obstetric Medicine, Public Medicine, Psychology, Physiology. Public medicine was subdivided into three sections, viz: 1. Contagious and Infectious Disease, 2. Medical Legislation, Meteorology and Disease, Statistics of Disease; 3. General Sanitary Arrangements, Drainage, Water-supply, Ventilation.

The Association continued for four days, and held its session in the University of Edinburgh, which was quite ample to accommodate all the sections at the same time in the various halls and class-rooms. The first part of the day, August 3, was taken up in registering and receiving a ticket which you were required to present to be admitted to any of the proceedings or privileges of the Society. The order of the day was, first, sermon by Rev. M. Lindsay Alexander, D. D., in the famous St. Giles' Church; secondly, meeting of the Council; thirdly, general meeting and the President's address, which was the great event of the day. The general meeting was held in the assembly hall at half-past three. At this meeting there was a large attendance of between five and six thousand, to hear the President's address. The members of the town council in their official scarlet robes, received seats assigned them to the right of the President. On the entry of the retiring President, Mr. E. Copeman, M. D., followed by the president elect, Sir Robert Christison, D. Lyon Playfair, M. P., Dr. Gibson, Bath, Dr. Faulkner and others, the assembly greeted them most cordially. Having expressed his thanks for the manner in which the members of the Association had assisted him during his presidency, and his gratification at the auspicious circumstances under which they had again met, the retiring President vacated the ehair, which was taken by Sir Robert Christison amid loud and long continued applause.

Bailey Tamse, in the absence of the Lord Provost, welcomed the Association to Edinburgh in very fitting words. Professor Christison then proceeded to deliver his inaugural address, the subject was, "Whether a change and what change was necessary in the education and examination of members entering the profession." As he had been professor for more than fifty years in the medical department of the University of Edinburgh, one of the most popular and populous medical schools of the country, he was attentively listened to throughout his address, which lasted over an hour. He gave a clear and succinct account of the origin, progress and present condition and constitution of the medical school, and pointed out the system by which the University was at present managed. In the education of stu-

dents in all branches, he recommended that the eye should be appealed to wherever it was possible. Where it was necessary to give practical instruction, it was absolutely necessary to give systematic instruction, as the latter was an essential preparation for the former. He did not like this multiplicity of examinations for licensing to practice. He thought the college de grees quite sufficient evidence of qualification.

The day wound up with the President's reception in the Music Hall at 9 o'clock P. M. The hall was tastefully arranged for the occasion, and good music furnished by the band of the First Royal (King's Own) Dragoon Guards and the band of the Theater Royal. About 1600 ladies and gentlemen, all in full evening dress, soon filled the hall and made it resound with their cheerful and merry voices. As the persons entered they were introduced to the venerable President, who gave them a warm shake of the hand and a hearty welcome. In one of the adjoining side halls was a bounteous table, spread with a splendid lunch, all the appetite (and you know doctors have appetites) could crave in the way of rich cakes, delicious fruits, sparkling wines, and cooling ices.

The order of the succeeding days was, first, meeting of the council; second, general meeting; third, sectional meetings; and fourth, at 9 o'clock P. M., the social meeting.

There were one hundred and thirteen papers announced in the first day's journal to be read before the Society, and among these there were two, the authors' names of which excited some discussion in the general meeting. The names were Mrs. E. Garrett Anderson and Mrs. Frances E. Hogan. The discussion finally resulted in a resolution to have the Secretary send to each member of the Association a circular requesting his opinion, yes or no, on the admission of women into the Association, and that the result should be made known at the next annual meeting. Many said they did not object to women practicing medicine, but did object to their being members of the Association.

At the second general meeting an address on Medicine was given by J. Warburton Begbie, M. D., LL. D., F. R. C. P. E., F. R. S. E. He said, that the late distinguished professor of metaphysics in the University of Edinburgh (Sir Wm. Hamilton) inquired: "Has the progress of medicine made a single step since the days of Hippocrates?" This inquiry was the topic of his address. In order to show that Medicine had made great progress since that time, and especially during the past thirty years, the speaker went back to the writings of Hippocrates, examined them critically, and compared them with our present medical literature, showing wherein we had made progress. His address was characterized by a thorough knowledge of medical science of to-day, replete with elegant allusions to the Greek and Latin medical literature, which added much to the style of the address, besides showing the great erudition of the speaker. After the address, the several sections met, where important papers were read and discussed, too numerous to report.

In the evening the President and Fellows of the Royal College of Physicians gave a *conversazione* in the Museum cf Science and Art, to which a general invitation was issued to members and non-members of the Association, their wives and daughters, special cards only being sent to the municipal authorities, the Lords of Session, the officers of the garrison, etc. With the presence of elegantly dressed ladies, good music and delicious refreshments, it is needless to add, that the doctors enjoyed themselves immensely.

The programme of the day was an address on Surgery, by James Spence, F. R. S. E., Professor of Surgery in the University of Edinburgh, and Surgeon to the Queen in Scotland. The topic of the Professor's address was

on the progress of Surgery. He said, that in looking at some of the more common changes in surgical practice, a superficial observer might almost imagine, that instead of progressing, the science might be said to be moving in a circle, and, were he disposed to be cynical, he might even think they had reverted to the mechanical appliances and red hot knives of ancient times. In the earliest times they found surgeons endeavoring to counteract the muscular tendency, to contract limbs after fracture, by weights, which was now done in a greatly improved manner by means of the weight and the pulley attached to the ankle of the patient. From reference to the present method of treatment in many cases of fracture, they might fairly reckon great progress had been made in the most important department of surgery, and those who recollect the experiments of the late Professor Syme, on the structure, anatomy and nutrition of bone, must credit that eminent man with no small share of the advance. With reference to the bloodless surgery, which consisted in the division of parts by means of various apparatus which prevent bleeding during the process, he was old enough to recollect seeing the result of the amputation of a thigh which had been treated as follows: The man had been injured on board a whaling vessel, and for lack of other aid, the ship's carpenter had performed the operation, and "paid" the stump with hot pitch. The patient survived to eke out a living by showing himself in surgical quarters—at once an ancient mariner and a connecting link with antique surgery. Modern surgery had made advances in this direction, and he hoped would still make further advances. He considered the treatment by galvano puncture, which had been introduced and had proved in many cases successful, was one of the most valuable additions to the means of treating formidable growth.

Many topics of interest were discussed which space will not permit me to report. In conclusion, the lecturer showed the gigantic strides which had been made in the system of treating wounds. The antiseptic treatment of his friend and colleague, Professor Lister, was being embraced in some quarters to the exclusion of conditions which he could not but think necessary to the treatment of wounds. After this address the several sections met, read and discussed important papers.

In the section of Public Medicine, Dr. Lyon Playfair gave an address on the relations of the Government to Public Medicine, which was listened to by a large and attentive audience. In this section Dr. Peddie, of Edinburgh, read a paper on "The necessity of Legislation for the control and treatment of insane drunkards," and Dr. G. F. Boddington read a paper on "The control and restraint of habitual drunkards." These papers were discussed with a great deal of interest. Professor Christison said that there was no doubt a well-considered resolution, on the subject treated of in the last two papers, put forth under the auspices of the Association, ought to have great weight with the Government. They must therefore be careful what they said, and at the same time be very resolved to carry it out. He proposed a resolution which was as follows: That excessive intemperance is in many cases a symptom of a special form of insanity, which requires special treatment, with a view, first, to the recovery of those afflicted; secondly, to the protection and advantage of them and of society; that in the present state of the law such treatment is not attainable, and that it is desirable that legal provision be made to render it attainable. After remarks by several the motion was put and carried unanimously.

The annual dinner took place in the evening at the music hall, Sir Robert Christison occupied the chair, and it was attended by about five hundred gentlemen. The gallery was occupied by ladies, and the affair passed off very pleasantly.

The programme of the fourth day commenced with an address on physiology by William Rutherford, M. D., F. R. S. E., Professor of the Institutes of Medicine in the University of Edinburgh.

This address, which contained the author's "experimental research of the effects of several medicinal substances on the action of the liver of dogs, in promoting biliary secretion," was, I think, by far the most important address of the meeting.

Professor Rutherford said that the method of physiological instruction had passed from mere prelection, illustrated by diagram, to an experimental exposition of the subject.

There had been an agitation of some persons against the principles of vivisections. He could not see how they could justify the idea that experiments on living animals, for obtaining more truth on physiological matters, were against the principles of humanity.

He was of opinion that vivisection was absolutely essential to a proper physiological knowledge.

No language could depict the movements of the heart and the circulation of the blood, so as to call forth a picture so vivid and true as that which, without an effort, sprang forth at sight of the experiment on the living animal.

No one would deny that animals daily suffered pain in order that they might be eaten by man, and also, in some cases, that man might not be eaten by them. If it was necessary to put animals in pain of death for the purpose of keeping man in food, might not physiologists inflict pain for the discovery of new truths, and also for the assistance of those who spent their lives in the healing of disease, the object in both cases being the same.

The speaker then proceeded to give the results of several experiments which had been made to discover the action of various drugs on the secretion of bile in the dog, which were illustrated by means of charts.

The results, briefly stated, were as follows: Croton oil was not found to be an important hepatic stimulant; podophyllin stimulated the liver enormously, and caused the production of bile almost the same as that which is secreted without its action; aloes was a very distinct hepatic stimulant, and produced less intestinal irritation than podophyllin; rhubarb never failed to increase the secretion of bile, almost the same as that secreted without its help, while it caused less intestinal irritation than either podophyllin or aloes; senna stimulated the liver, but not to the same extent as rhubarb, and it seemed to render the bile more watery; colchicum caused the secretion of a large amount of biliary matter; taraxacum stimulated the liver, but not to any great extent; calomel increased the secretion of bile in one experiment, but three others appeared to show that it was not a hepatic stimulant, at all events in the dog; gamboge produced strong intestinal irritation and profuse purgation, with a fall in the secretion of bile probably owing thereto; castor oil showed a decided purgative action, but produced very slight stimulation of the liver; alcohol did not increase the secretion of bile.

It thus appears that podophyllin, rhubarb, aloes, and colchicum had the most marked effects in increasing the biliary secretion of the dog; and, as to their mode of operation, it appeared most probable that they were absorbed and directly affected the liver, though on this point it was not professed that anything had been definitely settled. A far more important practical point was the following: How was it that these experiments proved podophyllin to be a hepatic stimulant, while in the experiments of the committee presided over by Dr. Bennett, it was found that that substance diminished the amount of bile secreted?

The only apparent explanation was that in the present experiments the dogs had been fasting for seventeen or eighteen hours, while in those of the committee they had their usual food. The clinical observer would probably accept the facts as not opposed to clinical experience as regards man, except in regard to calomel. It had simply been shown that while there were a number of substances supposed to be cholagogues in man which excited the liver of the dog, calomel was not one of these, although in the dog as in man it produced purgation, and although the researches of Dr. Bennett's committee conclusively showed that dogs could be salivated by mercury as well as man.

[To be continued]

Book Notices.

VISION :—Its Optical Defects and the Adaptation of Spectacles. Embracing first, physical optics Second, physiological optics. Third, errors of refraction and defects of accommodation, or optical defects of the eye. With seventy-four illustrations on wood. By C. S. Fenner, M. D. Philadelphia: Lindsay & Blakiston. Cincinnati: R. Clarke & Co. 8 vo. pp. 299, 1875.

The present work will undoubtedly fill a want felt by many physicians. It is not a work on diseases of the eye, but a philosophical treatise upon optics as it concerns the eye. Part I. is devoted to physical optics, and explains the laws governing light in the same manner as is done in the works upon natural philosophy. Part II. treats of physiological optics, discussing visual sensations and visual perceptions. Part III. considers the errors of refraction and defects of accommodation, as are found in hypermetropia, myopia—near sightedness, astigmatism, difference in refraction of the two eyes.

The scientific physician will find it a valuable addition to his library, as it explains many of the phenomena in regard to vision, the solutions of which would have to be searched for through various volumes upon optics and treatises upon the eye. But although prepared more especially for physicians, it will be found an interesting work to the cultivators of optical science generally.

THE CHOLERA EPIDEMICS OF 1873 IN THE UNITED STATES. By JOHN M. WOODWARD, M. D., Supervising Surgeon U. S. [merchant] Marine—Hospital Service. Washington: Government Minting Office.

This is an octavo book of 1025 pages. It gives a complete history of the epidemic of cholera in the United States during the year 1873. It contains quite a number of maps and diagrams for the purpose of illustration, which add very much to the value of the work.

But besides the history of the disease as we had it in 1873, the work treats extensively of the origin of cholera, its character, mode of propagation, transportation, etc.; the summary of which is of use in assisting to a correct estimate of the value of any suggested means of prevention or limitation.

We have not space to give the meagerest outline of the work. It must suffice to say that all who are at all interested in the subject of cholera—its origin, causes, spread, etc., will find it most invaluable.

Editorial.

Cincinnati College of Medicine and Surgery.—Since the 15th ult. a preliminary course of lectures has been in progress in this institution. The regular term begins October 4th. The prospects are unusually promising for a large class. At the time of writing large numbers of students are matriculating daily.

The faculty have been exerting themselves to enlarge the dispensary connected with the college. The patients attending upon these clinics are increasing in numbers daily, and the prospects are that the dispensary will soon be the largest in the city. It is determined to make it vie with any of the hospitals in the city in the value of the clinical material.

Regular weekly lectures will be given in microscopy throughout the session, affording students full opportunities to learn the use of the microscope, to cultivate microscopical anatomy, pathology, chemistry, etc.

Professor Miles having recently returned from Europe will resume his lectures. While away he added very much to his means of illustration.

Microscopes and Optical Goods.—Mr. Ferd. Wagner, of this city, has taken the agency for the sale of Mr. Joseph Zentmayer's microscopes and lenses, and is prepared to supply them at the same price they can be had in Philadelphia. Mr. Zentmayer's work needs no commendation—his stands and lenses are equal to those of the most eminent makers of the world.

Besides microscopical apparatus of every variety, Mr. Wagner has always on hand a large stock of telescopes, cameras, opera and field glasses, spectacles, etc., etc. See his advertisement.

Correction.—Dr. C. L. Gregory, of Montezuma, O., writes us that the formula of tr. lobelia which he employs, and gave in a foot note to his article in August number of Medical News, is *eight ounces* of the powdered seed—and not eight drachms, as printed—with sufficiency of alcohol to make one pint of the tr. by percolation.

Without reference to the error in Dr. G.'s article, we will take this opportunity of saying that very frequently manuscript is sent us so illegibly written that no one, not even the writer himself, could make out many words. When the printer and proof reader are thus left to *guess* what word the author intended to write, we can not take up space in subsequent numbers in making corrections when the right word fails to be guessed.

Rokitansky's Farewell Address.—On the 16th of July the distinguished anatomist and pathologist, Rokitansky, delivered, in the University of Vienna, his valedictory address before retiring from the professorship. It is a vigorous and thoughtful production, rich with the wisdom of wide experience. He entitles it his "Legacy to his Scholars." Various questions of the day are touched upon. One of his warnings is againt admission of woman to equality with man; another, against an excess of competition in life; and a more urgent one, against "modern individualism," which shows itself in the ruthless pursuit of personal objects, and in the readiness with which the ethics of the day excuses all manner of wrong doing, out of a misplaced sympathy, or a belief that nothing is in itself bad.

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Original Contributions.

TRANSFUSION OF BLOOD—ITS RELATION TO PHYSIOLOGY.

By R. B. Davy, M. D., Cincinnati.

Transfusion of blood has become a favorite method to combat certain diseases, and with some a veritable hobby. Medical journals are replete with literature upon the subject, and the daily newspapers are occasionally weighted with long columns pertaining to this particular method of treatment, reciting wonderful cures, etc., so that one has but to read in order to learn how new blood, being passed into the vessels of a worn out organism, will bring back health and vigor.

I have known of cases where the greatest encouragement was felt by the practitioner, after having injected half a dozen ounces of calf's blood into the veins of his consumptive patient. A gentler experimenter uses the blood of a lamb, as if he was really trying to instil the qualities of that beast into its superior.

The practice of transfusing human blood is licensed by the marked success of but few cases; and, beyond certain specific indications, authorities agree that it is worthless.

The old idea that blood is blood, whether it comes from a man or a monkey, was endorsed by the men of 17th century. They practiced transusion with great ardor and expectations, but it exploded in their hands, and was dropped for nearly two hundred years In the early part of the present century the practice was revived, and Blundel and his followers demonstrated some important facts connected with the process. For instance, the corpuscles were found to be indispensable and most active, and such conditions as hemorrhage and collapse of cholera were the only ones susceptible to this form of treatment; and, moreover, a fact which should set the most confirmed bungler to rights—viz: the blood of different species never had the desired effect

The experiments of Brown-Sequard were calculated to give new hopes to the transfusers, inasmuch as he showed that the irritability of certain tissues muscular, nervous, etc., could be brought back by injection of blood, after having once passed away, and that the heart of almost any animal could be controlled by controlling the blood supply to that organ.

A curious experiment, originated and practiced, so far as I know, by Prof. Flint alone, is that of adjusting a syringe to the circulatory apparatus of a dog in such a manner as to draw out with one stroke of the piston

nearly all the blood. The dog falls lifeless; nutrition is checked; and the vital forces are powerless. Another stroke of the piston returns the blood to the animal, which gets upon its feet, wags its tail, and is a dog again.

Gross advises the transfusion of human blood in cases of sudden hemorrhage, and speaks of more than twenty cases where life has been saved by it. All authors agree that it is a remedy to be resorted to with the greatest caution, and only applicable in the conditions enumerated above.

With these few remarks concerning the history of transfusion, let us inquire into the merits of the practice, and determine, if possible, whether to expect any aid from it outside of its application to hemorrhage.

This inquiry will be involved in a connection with what some may be disposed to call hypothesis. I think, however, there will be no difficulty in banishing that word, since what will be alluded to must carry in itself the evidence of truth without actual proof. The blood is the most wonderful a.d complex substance of which we have any knowledge; in fact, to obtain an idea of its nature and composition is quite an impossibility. To say it is composed of albumen, fibrin, water and salts, does not help us in the matter, for how can we conceive a compound a single constituent of which taxes us beyond our understanding.

Chemistry tells us that albumen is composed of carbon, hydrogen, oxygen, and nitrogen, with varying proportions of sulphur and phosphorous. It is true enough that we obtain these elements from albumen, but as such it is wrong to suppose they exist in it. Physiologists call this substance a proximate principle, but, in the true sense of the word, they would probably do better to call it an element, for, as regards the blood, it is an element. Suppose we drop a little sugar into some water, according to the thinking of the present day, I think we would be justified in calling this solution a chemical compound. The two factors entering into said compound are proximate principles, using the terms applied to the component parts of the body. To say that this compound, or one of its factors, is composed of carbon, hydrogen, and oxygen, is far more vague than to say that it is an individual substance, describing it as we would any one of the elements. Suppose, to use the solution of sugar a trifle farther, we dissolve a grain of sugar of different brands each in five vessels of water, the first to contain one part, the second two parts, the thir.l three, and so on up to five. We would still have solution of sugar, but of five kinds or degrees or brands if you please. Now albumen is not the same substance the world over; it is not the same in any two individuals; nay there are conditions in the same individual which render it as widely different as the specimens of solution of sugar spoken of.

But for fear of conveying the impression that I am driving at breakneck speed, I will pass a little slowly over these points. It is useless to appeal to the ordinary tests for albumen. Heat, alcohol, the mineral acids act alike upon albumen derived from whatever source, so that, except a rough distinction between this and kindred proximate principles, we have nothiug to expect. The only way that we can approach this subject is by studying its transformations; marking the influences that it is subjected to; following it through the curious mazes of organisms, until even by this roundabout evidence we are compelled to accept as truth that which, otherwise, would not be susceptible of proof. We take, for instance, an individual provided, as we well know, with a certain digestive and assimilative apparatus. This apparatus, as we know farther, is not a laboratory where compounds are resolved into their elements, but an apartment where proximate pinciples are discussed in a very peculiar and characteristic manner.

This man is a cosmopolitan, and luxuriates first upon our delightful blue

grass beef, with wheaten bread and our home fruits and vegetables. In a word he is living upon the food furnished in and around Cincinnati. From this place he goes to some southern point where his palate is sauced with wild Texas beef, the fish and bivalves of that section, corn bread, the fruits and other esculents peculiar to that quarter. Thence to the extreme north where the necessity of eating seal's flesh and drinking train oil is entailed upon him.

We know that in each case which I have spoken of this man's food is absolutely different. Different organisms without speaking of the change brought about by the difference in location, where the natural influences causing an organism to flourish are peculiarly different. It is without reason to suppose then that this man's assimilative apparatus would convert each of these different foods into one and the same substance.

If the omnivorous individual possessed the same kind of blood as the vegetarian, the organisms at large which are formed from it would not vary in certain particulars, which experience tells us every day is the case.

I have selected albumen because it is the principal ingredient of the plasma, and whatever is true of that in this respect is true of the blood. The distinction in the albumen of this man's blood at the different times spoken of lies securely behind the coagulum of our tests, and we are at as great a loss to understand its real na ure as if we were contemplating its ashes. But when we study the characters of the organisms from which man takes his food, and know them to be differently constituted, not only as regards species, but as individuals; not only in anatomical, but also in chemical composition, we can conclude to a certainty that there is an absolute variation in the composition of every man, woman, and child on the globe. No less authority than that of Chas. Darwin asserts and proves, by hundreds of instances, that there is often as great a difference between individuals as there exists between species.

Let us take another example, one that we can easily recall. Suppose, as occurred many times in our city soup house last winter, a large concourse of differently constituted individuals of different nationalities and habits, are fed on the ordinary diet of such places, made in one huge kettle, and hence absolutely uniform in composition. Would it be possible for the assimilated bean soup to maintain its identity in the organisms of the individuals spoken of? Would not the soup be acted upon by every individual in a manner peculiar to each? Would not the end of assimilation find a different character of blood in the vessels of each individual? I answer, yes.

It is a notoriously difficult thing to make a correct analysis of the blood. Comparatively few have attempted it; but I doubt not that if it was practised oftener, even with the clumsy means at our disposal, many variations would become apparent without speaking of the infinite number which, for lack of means to demonstrate, we can only follow in our minds.

Stepping from the imaginary circumscribed condition of health, let us pass into that doubtful condition of incepient and unconscious disease of the assimilative organs. There, as the apparatus and digestive fluids become perverted, so the plasma of the blood, and secondarily the whole organism, until the confirmed dyspeptic of many years possesses blood, throughout the whole organism peculiar to itself, and entirely different from his former self or healthy relative. Any constitutional taint whatever lurking in the system of an individual, although inoculation or infection is impossible, is a wonderful instrument in that never-ceasing process of differentiation, producing conditions in comparatively short seasons, where ordinarily it would take long years. An infinite number of instances could be adduced in this connection, but the space allotted me and the intention of

this paper both forbid it. Age and sex undoubtedly have an important influence upon the character of the blood plasma in nutrition, growth, and reproduction, processes which so nearly concern the condition of this fluid.

A vivid picture of what I wish to show is seen in the various stages of starvation, when the blood and all the tissues of the body become not only changed in weight, but so much in character as to be scarcely recognizable.

Fibrin, a constant element of arterial blood, changes its features in every animal that we know of, and though we have no key to its mystery, still it is plain to us from the mere fact of its coagulation that the fibrin in bird's blood is something very different from that of the ox.

In the first part of this paper I stated that Blundel and his followers demonstrated the fact that the semi-solid elements of the blood were the parts which determine the success of tranfusion. Taking this view of it, and excluding the plasma or fluid portion of the blood from any part in the operation, it becomes a question as to what extent and in what manner the globules act. The nature and function of the red globules can no longer be regarded as unsettled. Since the time of Lewenhaek these little bodies have been studied with the utmost care. As helpers to the process of respiration they are indispensable, having been shown to absorb from ten to fifteen times as much oxygen as pure water.

Since the only function which we know to be possessed by the globules is that of respiration, we must conclude that they act in all such cases by enabling respiratlon to go on. The fact that serum injected into the vessels will not sustain life, only proves to us how inseparable the processes of nutrition and respiration are. Blood, as it appears to us circulating in the vessels, furnishes the requisites to carry on the processes. Now we can suppose that the globules play a simple mechanical part of carrying the oxygen, but the action of plasma is by no means so simple. The plasma of the individual's own blood is prepared, as it were, to enter the tissues immediately; that of another individual has, certainly, no such preparation.

It has been shown by various observers that the blood of different species will prolong life for awhile, but death eventually takes place. Here I take it we have a mere exaggeration of what happens when the blood of a different individual of the same species is transfused. The plasma or part which becomes directly subservient to nutrition, is farther removed from that state of high composition which is insured by the assimilative organs of the individual.

The dangers and difficulties of the operation must not escape our attention. The possibility of a little air creeping in, the fear of a coagulum, and other unexpected embarrassments must certainly detract from the practicability of the method. The object of this paper is to give some definite ideas as to the propriety of transfusion.

A knowledge of nature and her laws is sufficient to enable anyone to see the state of things at once. Hence I have attempted to hold the mirror up to nature, hoping to reflect images characterized by truths upright and unperverted. I have described in a clumsy, tedious manner, the relative variations in the composition, and the consequent variations in the blood of different organisms. I have quoted the natural inference: that as we proceed from a given individual, the gap of distinction becomes wider and wider. And now we come to the rational conclusion which demands that if tranfusion be practiced at all, the blood transfused be as nearly as possible suited to the organism of the patient. As practice has demonstrated, slight discrepancies are overcome by the integrity of the system, and the ill effects are but slight; but when a man is deluged with a fluid which was created for a beast, it cannot help acting as a poison, and its effect must be

sure and rapid. It cannot be denied in the face of the authorities that there are cases where this practice is indicated, yet at the same time we are impressed with the fact that it is but slightly the lesser of two evils. Uterine hemorrhage, which undoubtedly furnishes the most promising cases, brings about a condition which simply concerns loss of blood without any change in the other tissues. Properly selected blood will satisfy this want almost completely. In cases where great change has been wrought in the system by habit, disease, or other influence, we would find that our efforts to select proper blood would be greatly embarrassed. A point which ought to convince us of the detrimental character of the injected blood is the toleration of only a few ounces. Four or five ounces is spoken of as the proper amount, when from sixteen to twenty pounds represents the amount in ordinary individual , female and male. If all blood was alike and harmless, we could inject several pounds with impunity. Although I have no other reasons for it than those I have given above, yet I firmly believe that the nearer we approach to the chemical and anatomical composition of one animal with another, the greater tolerance there would be in one animal or individual to the blood of the other. In other words, if we would select two individuals of like habits, associations and hereditary influence, we could actually bring about a complete interchange of the pabulums without detriment to either.

But as differentiation in nature has excluded the possibility of such cases, we can rest assured that in every case the blood of the best selected individual could not be transfused without a certain amount of detriment to the patient. In thinking of this subject, I can but recur to the wise injunction of Prof. S. H. Dickson, given to the class of which I was a member: "Individualize your patients." This was a common expression with him, and it seems that no words could have fuller meaning, or better convey the convictions of sound judgment and deep thought. To transfusion of blood it is doubly applicable, since no one human is the counterpart of another, and no man appears, feeds, acts, or thinks exactly like his neighbor.

CHRONIC FOLLICULAR PHARYNGITIS.

By Bernard Tauber, M. D., Cincinnati, O.

To the physician is rarely afforded an opportunity to see this disease until it has existed for several months or years. The patient will complain of dryness in his throat, with or without a disposition to cough or expectoration, or to clear his throat from a foreign body, feeling a lump, a hair, or a pin, etc.; some degree of hoarseness; more or less impairment of hearing and trouble in swallowing. With all these symptoms the patient will enjoy tolerable good health. At a later period all the symptoms will have increased in severity.

The causes of this affection are generally those which bring on a catarrh of the mucous membrane. Public speakers, clergymen, singers, smokers and spirit drinkers are especially liable. In medical literature this affection, from it frequency among the clergy, is known as the "clergyman's sore throat." It is not confined to this class alone, and the prevalence among them is due to exposure to draughts from open windows, and inequalities of temperature under which they often preach, etc. The appearances present themselves in small circular or irregular projections, either isolated or in clusters, varying from that of a pin-head to a small pea. Their color

is deeper red than the surrounding mucous tissue. These prominences consist of enlarged or hypertrophied glands. Usually we notice a narrow line of redness about the base of them. Frequently the patches are close to each other bordered by these red lines. Sometimes the mucous membrane appears sunken, and has a granulated appearance, and may occupy the edges of the arches of the palate. At this stage the patient is not annoyed much—the voice is not much affected; will be no cough, and the expectoration will be a viscid mucous. At a later stage the follicles become more enlarged, the mucous more viscid and adherent. The disease advancing to the posterior wall behind the soft palate, invading the glandular tissue of the vault of the pharynx, often strings of mucous will hang from the posterior wall of the soft palate and extend up to the posterior nares. The patches of enlarged follicles becoming larger, their surface is often velvety. In the interspaces we may notice certain spots of superficial ulcerations, indicating a destruction of the epithelial layer of the mucous membrane. The tonsils and uvula are apt to become irregularly enlarged, and covered with a grayish or whitish secretion. The voice is often affected (though the larynx may not be implicated at first, but eventually it becomes involved), is husky at times and hoarse, or the patient may be aphonic in the morning, but when engaged in conversation the voice gradually becomes clearer. In swallowing solid food there is pain. The patient may complain also of impairment of hearing, because the lower portion of the mucous membrane of the eustachian tube is continuous with the mucous membrane of the pharynx, and the disease may thus be propagated along the tube, and thus affect the structure of the middle ear. By a chronic thickening of these parts, the free opening of the eustachian tube is narrowed, and the access of air into the interior of the middle ear is excluded. Inflammation and enlargement of the uvula frequently coexists with chronic follicular, pharyngitis, and gives rise to a harassing cough and expectoration.

The treatment of this affection must be a chronic one, and seldom the patient will submit to it; therefore it is not always so successful as one would expect. These cases require constitutional and local remedies, and especially the latter. Sometimes the effects are very prompt, again very slow. In using astringent solutions the pharynx should be washed out by a syringe or a spray, to detach the strings of mucous adherent to the mucous membrane. This is of great importance. It is good policy not to commence with a strong solution; and apply with a small camel hair pencil, or a small piece of cotton held in a pair of pharyngeal forceps, and use a solution of nitrate of silver 30 grs. to the ounce, and increasing it to 60, 120, and 240 grs. to the ounce. The solid stick is employed when we desire to produce a destruction of the parts and maintain it in contact for some seconds.

At the clinics and hospitals in Europe, nitrate of silver is always used in diseases of the pharynx. Should we fail with this treatment, we may adopt the plan to split each follicle with a point of the knife, touching it with a crystal of nitrate of silver. We employ in addition to it the spray of solutions of tannic acid, alum, sul. zinc, or sulp. copper, etc. In order to keep up the astringent effect, we can also assist the local treatment by the use of counter-irritations. Some authorities recommend in obstinate cases, in addition to the constitutional treatment, the use of the iodide of potash; sometimes the bichloride of mercury in small doses is administered with the iodide of potash, even if there is no syphilitic taint to expect.

CALCULUS VESICAE.

By James Barnsfather, M. D., Cincinnati.

In September last Mrs. M. K. came to my office to consult me in reference to a womb disease, which she said had troubled her for several years, and that for the last two years she had been continually under medical treatment, but instead of getting relief, she was daily getting worse; felt very despondent, and stated that if she could not get any help she knew she would soon die, as she was quite worm out by the pain and want of sleep. Requested an exploration which was granted. The bimanual examination revealed the fact that there was a large, hard, knotty substance immediately in front of the uterus, pressing that organ so far backwards, that it was with great difficulty I could reach the os tincæ with my finger. Believing that this abnormity was the cause of her suffering, I set to work to find out what it was. I passed a sound into the bladder and found that it struck a calculus mass. I then passed a dilator into the bladder, with the double object of opening the meatus, and pinching off a piece of the stone for examination. I then ascertained that I had a phosphate of lime calculus to deal with. After informing her of the cause of her troubles, and giving her encouragement to go through the operation, she departed. Next day when I called at her house, she stated that her water came easier since the instrument was passed. I repeated the dilatation, then inserted a large sea tangle tent and left it in the meatus; it had a large hole drilled through it to let the urine escape freely. Twenty-four hours after I found the tent very little enlarged, so I put it in boiling water for a few minutes to disinfect it, and also to make it swell. When I called next morning the parts were ready for the operation. After washing out the bladder, I informed her I would operate in the afternoon. At 3 P. M. I again called in company with Dr. Wm. Knight of this city. We found the patient excited and anxious, and persistently demanded that chloroform should be administered to her. After Dr. K. had succeeded in anesthetizing her, I introduced my finger into the bladder and felt a large hard body, which, I would judge, to have been nearly the size of a hen's egg. This single stone (which I afterwards discovered to be a calcareous envelope inclosing several large calculi,) had a hole running through its centre. This opening may have been formed by my previous manipulations, for I found that but slight pressure was necessary to crush the friable shell surrounding the nucleii. After working patiently, first crushing, and then removing the fragments both of the envelope and of the nucleii, I succeeded in getting all the pieces out except one large stone which was situated on the left side; the walls of the bladder having contracted upon it, I could not get hold of it without injuring them. So I waited until the patient had somewhat recovered from the chloroform so that she could co-operate with me. My object was to fill the bladder full of water and then make the patient stand on her feet; the stone being freed from the embrace of the bladder would gravitate towards the lowest part. My finger being in the meatus, would recognize the presence of the stone there when it would be withdrawn, and after the evacuation of the water I would find the stone without any difficulty. This was done and the stone was then removed; it was the largest piece extracted. The entire mass removed weighed one ounce. The patient after the operation, experienced both physical and mental relief. Having ordered a warm poultice to be applied to the parts, and also a soothing draught, we left the patient resting comfortably. For

the first twelve hours after the operation she was rather restless having frequent desire to urinate, and during this time she passed quantities of debris. Next day (Tuesday) I found her cheerful and hopeful, was suffering no pain, only tenderness when the poultices we e touched, can hold her water until ready to void it. She has diminished tenesmus with each succeeding micturition. Ordered infusion of slippery elm to be used freely. Wednesday, still improving, continued poultices, urine thick and ammoniacal, with considerable catarrhal exudation. Continued slippery elm infusion. Thursday, urine improved, no tenesmus, no debris passed. Friday, slept all night, passed a large amount of water in the morning, sat up all day, said she felt better than she had done for two years. Saturday and Sunday she was about the house doing her work. On Monday afternoon I called in company with Dr. Knight, for the purpose of making another examination of the bladder, o see if any of the stone was retained in that organ, but previous to administering chloroform we freely injected warm water to relax the parts. After anesthesia was complete, we made a careful exploration of the bladder, but found it entirely empty. Ordered an anodyne draught and poultice as before. Tuesday, slept all night, passed water without pain in the morning, stated she only kept her bed to keep the poultice in loco. Called on Wednesday and found her in the kitchen cooking. She stated she felt perfectly well.

Selections.

RECIPROCAL ACTION OF THE MIND AND BODY,

Dr. Botsford in his address before the Canadian Medical Association, very profitably discoursed on the power of the mind over the body in diseases where functionnl derangement, unaccompanied by tissue change, alone prevailed. This close yet inscrutable association; this latent correspondence of parts seemingly unconnected; this reciprocal influence of mind and body has long fixed the attention of medical men and metaphysical enquirers. "Can we," says D'Israeli in his Curiosities of Literature, "conceive the mysterious inhabitant as forming a part of its own habitation? the tenant and the hou e are inseparable, so that in striking at any part of the building you inevitably reach the dweller." Pascal also says truly, "We must not mistake ourselves; we are body as well as spirit." Those who support life by bodily labor are apt to consider that physical inactivity is laziness. It is however certain that to think is to labor, and that as the body is affected by the exercise of the mind, the fatigue of the study is not less than that of the field or manufactory. Exercise gives sleep, vigor, cheerfulness, robust health, and a good appetite, while the effects of sedentary mental labor are diseases that shorten and embitter life; interrupted rest, tasteless meals, perpetual langour and anxiety. M. Reveille, Paris, in his "Physiologie et Hygiene des Hommes livres aux travaux de L'Esprit," says, if there be a positive fact in pathology, it is, that all the causes capable of producing irritation and inflammation commence by exciting and increasing sensibility. It is then on the nervous system generally and primarily that all the causes of disease act. Now when this system has acquired an exclusive and unnatural predominance, when the economy, so to speak, is saturated with irritability, it is clear that all the organs which it pervades must be in a *quasi* morbid state,

and predisposed to tissue change. This is precisely what takes place in men who work with their brains, and neglect the requisite exercise for the body. In this class the pathological affections of the brain are always of a serious character, by reason of the intense and incessant excitement which this organ undergoes. One of the principal effects of the continued tension of the brain is to weaken all the organs more or less dependent on it, by depriving them of a part of the nervous influx necessary to their use. "A capito fluit omne malum" says Fernel. The organ most exposed perhaps to this privation is the stomach; debility of the digestive system seems in a manner peculiar to illustrious men. Tissot asserts that "the man who thinks most digests worst, *cæteris paribus*, and that he who thinks least is the man who digests best." M. Parisæ argues that when sensibility predominates, contractility diminishes, and that occurs more especially with respect to the digestive apparatus, the tonic and contractile power of which is not always proportioned to its sensibility, the consequence of this is, that the debility of the stomach now in question is always accompanied with nervous irritation of this organ. To this we may add that the continued excitement of the brain has a direct and immediate influence on the stomach. Shakespeare was well aware that sudden news, agreeable or otherwise, at once disturbs digestion, suspends the appetite, and throws the digestive organs into a morbid state of langour.

"Read over this, and after this—and then
To breakfast with what appetite you have"

When the act of digestion is interfered with and retarded; when chylification is tedious and incomplete, it is evident that such imperfect elaboration of the chyle will introduce into the system nothing but impoverished blood, and that the nutrition will be essentially altered. Amatus, a Portuguese physician, it was, who said that a bad stomach followed profound thinkers as faithfully as the shadow follows the body. M. Parisæ considers next in order to the stomach, the liver and urinary organs, as most frequently modified in their functions and structure in men of studious and sedentary habits. In enumerating the principal diseases to which these persons are liable he begins with affections of the brain These, he remarks, sometimes come on rapidly, and explode, as in cerebral inflammation and brain fevers; while the effects of incessant mental toil are at other times slow. Apoplexy, to which so many profound thinkers fall victims, presents various modifications. Before the person gets the fatal stroke, how often has the brain been excited, strained, and outraged! how many times have rushes of blood to the head, squalls of heat in the face, dull pains and sense of weight in the frontal region, temporary dimness, violent arterial pulsations and restless sleep, clearly indicated sanguineous repletion, and cerebral excitement beyond what was natural. These effects however pass away; they are forgotton; they return, and the delicate structure of the brain is soon broken up. A slight attack of apoplexy has been called by Menage, "Un brevet de retenue de mort," which may be rendered, "Death's bond of security." Napoleon, who dreaded apoplexy, one day asked Corvisart, his first physician, for some information respecting this disease. "Sire," replied Corvisart, "apoplexy is always dangerous, but it is preceded by certain symptoms. Nature seldom strikes the blow without giving warning. A first attack, which is always slight, is a *sommation sans frais*—a summons without costs; a second attack is *sommation avec frais*—a summons with costs; but a third is a *prise de corps*—an execution on the person." M. Parisæ endeavors to explain the gradual action of the causes of this disease. The permanent

excitements of the brain at first increase its energy or activity. This excess of action, when repeated, occasions every time an afflux of blood to the organ; the stimulations then become congestional. At first these congestions disappear more or less completely, the brain is freed, and the equilibrium restored. Afterwards the forced dilatation of the vessels becomes such that the congestions disappear but imperfectly; this gives rise to symptoms not however of a very alarming nature. At a still later period, when age advances and the venous system increases in size, and the cerebral veins have a tendency to become varicose, at the same time the arteries diminish in diameter, and these congestions become more permanent. From these morbid states arise coma, stupor, softening of the brain, tremors, paralysis, and finally apoplexy in all its degrees.—*Ed. Canada Lancet.*

STERILITY AND DYSMENORRHŒA TREATED BY BILATERIAL INCISION OF THE CERVIX UTERI.

CASE 1.—Mrs. O., native of and residing at Evans, N. Y.; age, thirty-one years; married eight years, and sterile; she menstruated at fifteen. During the last five years has been failing in health; menses have been irregular and very painful; she is anæmic, emaciated, and has a cough, and she is under the care of a physician, whose diagnosis of her troubles is consumption, and who predicts that she will die when the leaves start, in the coming spring. She consulted me on account of her dysmenorrhœa, which has troubled her since her married life began. On examination I find the uterus retroflexed, the cervix conoidal, and the os so small as to be scarcely discernible. The uterus was replaced by the sound, and Hodge's pessary applied. Dilatation of the cervical canal was attempted by sponge-tents, without much effect, or relief to the dysmenorrhœa. Three months after my first examination I made bilaterial section of the cervix, afterward applying Scattergood's pessary. The painful menstruation never troubled her again. She became pregnant within six months, and while wearing the pessary, greatly to the surprise, and somewhat to the regret of herself and husband. She was delivered at full term of a healthy boy, and has since had a daughter. She is a healthy woman, and weighs nearly two hundred pounds.

CASE 2.—Mrs. F., native of and residing at Brant, N. Y.; age thirty years; menstruated at fourteen; married twelve years, and sterile. Her husband had been absent three years of this time, soldiering. She had suffered much during her married life, from dysmenorrhœa, and also from nervous mimicry of "liver complaint," and its radical treatment, having been several times salivated. Her lady friends and physician agreed in the opinion that pregnancy would make a healthy woman of her, and I was consulted on account of her sterility. I found that she was subject to violent attacks of sick headache, had dyspepsia, and more or less constant lumbar and pelvic neuralgia. On examination of the uterus I found a conoidal cervix, with a moderate degree of retroflexion, and some endocervical inflammation; the canal was filled with a plug of mucus. She was treated locally, with chromic acid, for three months, with some amelioration of local pains and distress, and improvement of her general health. Not becoming pregnant, however, six months afterward section of the cervix was made. In sixteen months from the date of operation she was delivered of a boy. She has since had two children. This lady's change

in physique, after the operation and consequent relief of the dysmenorrhœa, was remarkable; her sick headaches, "liver complaint," and pelvic neuralgia, entirely disappeared, and she gained fifty pounds in weight before pregnancy occurred. At the birth of the first child she suffered laceration of the perineum, which was promptly relieved by operation. * *

Case 3.—Miss M., milliner, age twenty-six years, native of Evans, N. Y.; consulted me on account of dysmenorrhœa. She menstruated at fifteen, and since the age of twenty has had painful menstruation. Her periods were a terror to her, and she was bed-ridden half the time, from the nervous irritation consequent upon the dysmenorrhœa and pelvic distress, with an insupportable feeling of weight in pelvis when standing. On examination I found the uterus retroflexed, the cervix long and conoidal, the os tincæ small, and a contracted cervical canal. Prof. James P. White, M. D., was called to visit the patient in council with me, and advised and performed the operation of section of the cervix. No pessary was afterward applied, and owing to insufficient attention after the operation, and to the fact that the os internum was incised, the incision again united, leaving the uterus retroflexed, and a tortuous, cicatrized cervical canal, that was nearly impervious to a probe, or the menses. For the next two years this patient was bed-ridden; the menstrual molimen was attended, at each effort, with pains like, and nearly equal to, parturition, sometimes lasting three days before the appearance of the menstrual flow. She required the use of the catheter twice daily, nearly all of the time, for two years, and the irritation of the uterine disorder upon the nervous centres produced, in time, a nervous imitation of nearly every known disease of various organs. She was visited by many quacks, who all agreed in condemning the operation made by Prof. White. At the end of her first year's rest in bed the uterus assumed its natural position. About this time Prof. J. F. F. Miner, M. D, of Buffalo, was called to visit her with me. Dr. Miner attempted to enlarge the cervical canal with a urethrotome. The result was of no benefit, and another year passed before she would consent to any further use of the knife. During this time dilators of various patterns, and sponge tents, were assiduously used, with but little benefit. At the end of two years from date of first operation, in the presence of Prof. White, I made another section of the cervix. Her next menstruation was painless. The result of this operation could not have been better. A large patulous os, and free cervical canal were formed, and the patient regained her general health, and has never had any more local trouble.

Case 4.—Mrs. Bohemian, living at Racine, Wis.; age thirty-eight; married fifteen years, and sterile. She is under the care of Dr. A. H. Hoy, who is treating her for dysmenorrhœa by sponge tents, to dilate the contracted cervical canal. This treatment had not had the desired effect, and while I was making him a social visit, he requested me to make section of the cervix. The operation was performed, as I thought the case required it, the cervix being elongated and conoidal. The patient's next menstruation was painless, and she was taken with a laudable fit to wash and be clean, and went to "cleaning house" during her menstruation, in her bare feet. The consequence was an attack of metro-peritonitis, from which she recovered by chance, but the benefit of the operation was small indeed.

Case 5.—Mrs. M., native of Cattaraugus county, N. Y.; age thirty-six years; twice married, and sterile. She has had violent dysmenorrhœa since her eighteenth year. She was brought to me by her father, a practicing physician, for examination. Her cervix uteri was found long

and conoidal, the uterus partially retroflexed, the cervical canal crooked, and I could not pass any sized probe or sound into the uterine cavity. It was decided to incise the cervix, which was done, and her next menstruation was the most painless she had ever experienced. She left immediately, however, to live in Albany, before I had finished her treatment. I have since heard that she became pregnant.

In the treatment of sterility and dysmenorrhœa, I always have limited the incision of the cervix to such abnormal conditions of the uterus as I have described, and these cases illustrate one form of these diseases, their causes, and their evident proper treatment. The operation of incision of the cervix in these cases was made on the fifth day after cessation of the menses, and in the manner described as follows:—The cervix is exposed by Sim's speculum, and brought into convenient position by a hook. It is then incised bilaterally, the cut being made from the cervical canal outward, from the os externum to within a few lines of the junction of the wall of the vagina with the uterus. The enlarged cervical canal, thus made, is then packed with pledgets of lint, saturated with carbolized glycerine. No styptics are used, especially no persulphate of iron. A large pledget of cotton-wool is then saturated with glycerine and opium, and applied over the os, in the vagina, to hold the dressings in position. Any hemorrhage is controlled by the tampon.

On the fourth day the dressing is removed and reapplied, and continued every alternate day until the next menstruation, when it is removed. After cessation of the menses the same dressing, alternated with sponge or sea tangle tents, is used, until a free, open cervical canal is secured, with a patulous os tincæ. The operation is perfectly painless, and an anæsthetic is not required.—*Dr. Curtiss.—Med. & Surg. Monthly.*

MOBILE MEDICAL SOCIETY.

Ipecac in Dysentery.—Dr. E. H. Fournier stated that in the last few weeks he had been enabled to enlarge his experience in the treatment of dysentery by ipecac. One case, a colored woman, who had not been under the care of any physician, had been suffering about a month There was great tenesmus straining and constant desire to go to stool, together with the characteristic discharges, frequently repeated. Gave twenty grains of ipecac, preceding it by a full opiate in the morning, and repeated at night. Next day she was entirely relieved of the griping, straining, etc., evacuations larger and fœcal, and she expressed herself as feeling well. There was still, however, considerable tenderness on pressure over the abdomen. She had no further treatment till the third day, when, there being some tendency to relapse, she had some slight treatment. This was followed by tonics, and she soon left the Hospital cured.

He also related a second case, in the person of a young Frenchman, also an inmate of the City Hospital, who had been suffering from dysentery nearly a month—sometimes better and sometimes worse. On admission, he was suffering a great deal, with all the symptoms of acute dysentery. Treatment same as that detailed above, and followed by equally satisfactory results.

Dr. Fournier remarked that he sometimes gave the ipecac combined with opium, in the proportion of three or four grains of the former to 1 of the latter. He always administers the ipecac in pill or bolus, if the patient can swallow it. He prefers this method to giving the powder in substance, as it is less liable to nauseate. He is treating at this time some cases of chronic

diarrhea with pills containing small doses of ipecac and opium, and apparently with the effect of gradually benefiting the patient.

Dr. Read had used the ipecac treatment in a number of severe cases recently, and with the happiest results. One case in particular—a young physician at State Line, Miss., who in alarm had sent for him to attend him, the disease having appeared in that locality in rather a violent form, with several fatal cases. The patient was cured with three doses of ipecac, 10 grains each, preceding each dose with an opiate.

Dr. F. A. Ross (the President) remarked that it was a curious fact of medical history, that though ipecac was first introduced to the profession as a remedy for dysentery, and was very extensively used in Europe and elsewhere for this purpose, yet from some cause or other it gradually fell into disuse in this connection; and now, following a very long period of almost complete abandonment, we are again hearing of its employment frequently in this disease. He said that pills were undoubtedly the best way to administer the remedy, as less likely to induce nausea and vomiting, which would frustrate the plan of treatment.

Typhoid Fever.—Dr. Oliphant reported a case of typhoid fever lasting twenty four days, and followed by a good recovery. There was nothing of particular interest connected with the history or treatment of the case, and he only reported it because he had been informed that typhoid fever was a rare disease in Mobile. He then asked Dr. F. A. Ross what his experience had been in regard to this question.

The President replied, that typhoid fever was a disease unheard of in the South long after the North had been frequently scourged with it. According to his recollection, the first case reported as occurring in the South was in 1840, by a physician at Vicksburg, Miss. At the time of this publication Dr. Ross was a student in the hospitals in Philadelphia, under the late Dr. Gerhard, and well remembers that gentleman calling in question the accuracy of diagnosis in the case reported at Vicksburg. Prof. Gerhard then gave it as his opinion that if typhoid fever ever made its appearance at all in the South, it would be a mild disease as compared with the same malady further North. Dr Ross soon after this settled in Mobile, and though he watched closely, it was not until 1843 that he saw a case. And, the number of genuine well-marked cases seen by him during his entire residence in Mobile would not amount to more than a dozen cases.

Peritonitis—Abscess of the Liver.—Dr. Smith reported the following: A young man who had been under Dr. Smith's care for chronic diarrhea several months since, afterwards placed himself in charge of another physician, who, as the young man reported, had cured him of the diarrhea. Reported to have been complaining of pain in his back and abdomen, and for which he had been treated by this same physician during a period of six or eight weeks. Symptoms present when Dr. Smith again took charge were: vomiting and great prostration, together with more or less tympanitis and intense tenderness over the abdominal region. Diagnosis: Peritonitis. Treatment: A blister over the abdomen, 8 by 10 inches, a purge, and rather full doses of morphine. On the day following, the blister had drawn well, bowels acted, vomiting ceased, and he expressed himself as feeling much better. Vomiting, however, soon returned, and afterwards became stercoraceous. Pulse, which had remained since the attack at 140, gradually went higher. The symptoms grew continually worse, and he died.

Post Mortem.—Assisted by Dr. W. H. Ross.—The abdominal cavity was filled with flaky lymph and pus, the result of the recent peritonitis. Six inches above the ileo-cœcal valve there was a sharp constriction in the calibre of this part of the ileum. On the posterior aspect of the right lobe of the liver there was found the partially empty sack of an abscess about the size of an orange. Dr. Smith said he had no doubt that the rupture of the walls of this abscess, and the pouring out of its contents, had set up the peritonitis which had proved fatal.

Dr. W. H. Ross stated that in the *post mortem* detailed above, in addition to the condition already detailed, he had noticed a thickening of the walls of the intestinal canal.

President F. A. Ross remarked that this case illustrated a typical case of abscess of the liver as it occurs in warm climates. First, a protracted bowel trouble, attended, in all probability, with ulceration, as the constriction found on *post mortem* would seem to prove; subsequently, pain over the region of the liver and reflected along the spine; then the abscess, followed by death.

Abscess of Liver—Dr. E. H. Fournier reported a case of abscess of the liver. With the assistence of Dr. Gaines, the tumor was aspirated and opened between the 8th and 9th ribs, and about a quart of dark pus evacuated.

There was no more discharge through the opening made by Drs. Fournier and Gaines in the above case after the first emptying of the abscess; but the cavity gradually refilled, and when, from the gravity of the symptoms, Dr. Fournier began to think seriously of again opening it, the abscess burst spontaneously, emptying its contents into the intestinal canal, by which channel about a gallon was discharged at once; in addition to which more or less matter continually drained away through the same channel. The patient's strength is rapidly giving away, and Dr. Fournier does not think he will live many days. The Doctor remarked, that while at first sight this method of emptying the contents of this class of abscesses—namely, through the intestinal tract—would seem favorable, clinical facts proved the contrary, and that notwithstanding the violent cough and distressing symptoms, there was more hope for a patient when the abscess pointed towards a bronchus and discharged itself through the lungs.

VACCINATION—ITS PROTECTIVE POWER.

Recent events in Montreal anent vaccination have given a forcible and practical illustration of the evils likely to arise from imperefectly performed vaccination.

There can be no doubt that the active opposition to vaccination in Montreal, and elsewhere, is due chiefly to the very imperfect manner in which vaccination has been too frequently performed. Indeed in too many instances the results have shown great carelessness or culpability on the part of practitioners in the selection of vaccine used by them, and in many instances phlegmonous erysipelas and axillary abscesses of a severe and alarming character have followed the use of vaccine contaminated with pus; in this way producing "pus poisoning," instead of the characteristic pustule and protective influence of a disease antagonistic to small-pox.

Negligence or ignorance in a matter so vital to the interest of a com-

munity is inexcusable. It is an old axiom that "a thing that is worth doing at all is worth doing well," and in no case is this more imperative than in the operation of vaccination where it has to be performed upon patients in the face of the most prejudiced opposition, and where any departure from the characteristic results which should follow properly performed vaccination are sure to be noticed and cited against the operation at the first opportunity. Great suffering not unfrequently arises from improper vaccination, sufficient in itself to deter people from having the operation performed. But such results cannot possibly follow except under exceptional circumstances, hence their too frequent repetition leads to the suspicion that the practitioner has been to blame, and that too in the very first and most important elementary matter of the selection of *pure vaccine*, free from pus globules—for to vaccinate with virus containing pus is simply to produce a poisoned wound, and to invite abscesses, erysipelas or other evils attendant upon pus-poisoning. Many practitioners never have any difficulty of this nature, and this immunity from bad results is attributable simply to care in the selection of the vaccine—never in any case using a doubtful crust, or one that could at all be suspected of containing pus globules. The practitioner who negligently performs this most important, though simple, operation is open to very grave censure, inasmuch as the consequence of his conduct tends to throw discredit upon a most benificent practice, and by deterring the masses from submitting to it, contribute their quota toward the sacrifice of human life, or holocaust, which is sure to follow, should small-pox make its appearance in a crowded community under unfavorable sanitary conditions, and with over-crowding, as is the case in large cities like many of those in our Dominion.

The frequency of erysipelas and abscess following vaccination must be traceable to a cause, and that cause is, in most cases, the presence of pus in the vaccine crusts made use of, many of which have never been selected by the practitioner, but have been purchased at a drug store, and possibly furnished by some "money grab" who cares more for the paltry price obtained than for the reliability of the article sold. Practitioners cannot be too careful, therefore, in the selection of the vaccine to be used, in view of the grave responsibility they incur in carrying out the practice.

Much has been said about the loss of protective power in vaccine, after repeated transmission from child to child. On this point there need be no doubt, since to the thoughtful mind it will be apparent that the vaccine disease is reproduced as effectually in each successful case of vaccination yielding a characteristic pustule as it was a century ago, and as effectually as each separate attack of measeles or scarlatina is perfect in itself and characteristic, inheriting all the peculiarities which the disease ever had or ever could have had. The necessity for the repetition of the operation or re-vaccination varies in different persons. The experience of the Prussian and English armies on this point is satisfactory. In those services re-vaccination is imperative every five years. The result is, not a single death from small-pox. In the Prussion army not a single case after re-vaccination.

The mortality rate in the city of Montreal in 1874 was 983, of which 955 were among the French Canadian Catholics, or that portion of the community which refuses this protection, or 1 in 100 of the population, and among protestants less than 1 in 100. These figures tell strongly against the clap-trap of the anti-vaccinationists and their followers, who, however, simply make out a case from the blunders of those entrusted with the performance of this and other sanitary duties. As a general rule "the failure is not in vaccination, but in the physician who performs it."

We have written more at length than we intended on this matter, but the subject is fresh in everybody's mind at present, and a large and respectable portion of the community of our largest city is placed in an improperly unfavorable light as a result of their antagonism to vaccination. The authorities, however, should first of all endeavor to create confidence in the vaccine used and the persons applying it, before seeking to enforce implicit obedience to their behests.—*Ed. Canada Lancet.*

THERAPEUTIC USES OF SALICYLIC ACID.

The "Wiener Medicinische Wochenschrift," for April 10th, gives a summary of the observations made on the physiological and therapeutic properties of salicylic acid, including those of Professors Kolbe and Thiersch. Professor Wunderlich gives salicylic acid in an almond emulsion with syrup of almonds and orange-flower water, by which its taste is completely concealed. After ten minutes' immersion in a bath of about 69 gallons of water at 102 75, in which nearly 9 ounces of salicylic acid had been dissolved, Kolbe could find no trace of the acid in the urine. W. Wagner has used salicylic acid externally in cases of contused wound and recent burns, by strewing a thin layer over the surface, and covering it with cotton-wadding. The healing process appeared to be accelerated. He has found an ointment (salicylic acid 1 5 parts, dissolved in three parts of spirit of wine, and rubbed with 15 parts of hog's lard) very useful in atonic ulcers of the foot, and especially in obstinate eczema of the face and head. He also praises a salicylic acid mouth-wash and gargle in cases of ulcerated gum, in sore throat with abscess, in various forms of stomatitis, and in diphtheria. In the last named disease, Wagner treats children, who cannot gargle, with a solution of 0.15 to 0 3 gramme of salicylic acid in water every two hours; for other children, he uses a gargle of salicylic acid 1.5, spirit of wine 15, distilled 150. If small crystals fall down, the solution must be warmed before being used. Wagner has treated fifteen cases of diphtheria with salicylic acid, with very encouraging results even when the trachea was affected. None of the cases died. He also used salicylic acid internally with benefit in a case of cancer of the pylorus attended with frequent vomiting of masses of readily fermenting matter—the acid having in this case more effect than creasote; and in a case of chronic gastric catarrh with fetid eructation, and in two cases of violent diarrhea with much decomposition of the contents of the intestines. Wagner has observed that the medicine is well borne, and that a portion is passed unchanged with the stools; also, that it soon passes into the urine, in which it can be found at the end of two hours (giving a dark violet color with solution of salts of iron).

Dr. Langfeldt relates a severe case of diphtheria of the larynx in a girl aged two years, in which the obstruction of the larynx, which threatened life, was overcome by salicylic acid. The child, however, died of suffocation in consequence of obstruction of the larynx by the membranes that were coughed up from the bronchial tubes.

Dr. Fortheim ("Memorabilien," vol. xix.) has treated thirty-one cases of diphtheria with salicylic acid, without one death. The duration of treatment in the most severe cases was eight days; in the slighter cases, two to four days. None of the cases were attended with diphtheritic nephritis (albuminuria); in one, there was paralysis of the soft palate. In the severe cases, Dr. Fortheim applied to the diphtheritic membrane every three hours a sponge dipped in a solution of salicylic acid, giving at the same

intervals a teaspoonful of the solution internally. The solution consisted of salicylic acid 2 parts, spirit of wine 9.1 parts, distilled water 200 parts.

E. Stephanides writes, in the "Wiener Medicin Press," on the use of salicylic acid in dysentery and chronic diarrhea. Dysentery has been very prevalent during the winter, as a result of overcrowding, in the Lower Austria Lunatic Asylum, of which Dr. Stephanides is one of the medical officers; it has caused four or five deaths each month. He appears to have given the acid in two cases, one of dysentery and the other of diarrhea, both internally and in the form of enema, with marked good effect; all other previous treatment having failed.

Dr. Paul Furbringer, assistant in the medical clinic at Heidelberg, describes in the "Centralblatt fur die Med. Wiessensch," the results of some experiments on the action of salicylic acid given internally and subcutaneously. In sixteen experiments (ten on rabbits, six on men), the administration of 0.1 gramme of salicylic acid to rabbits, and of 0.25 to 0.5 gramme to men, did not produce any change of the variations of temperature that had been carefully noted for some days. In nine experiments in which septic fever was artificially induced, salicylic acid pr duced a distinct lowering of the temperature, and a rapid reduction of the fever. The dose of salicylic acid used in these experiments (on rabbits) varied from 0.5 to 0.2 gramme; it was given in three cases in starch-enema; in two, by the stomach, dissolved in water; in three, by subcutaneous injection (dissolved in alcohol or in warm water); and in one, by both subcutaneous injection and enema. Dr. Furbringer is making further researches in Professor Friedrich's wards on the use of salicylic acid in febrile affections.

Dr. Butt, of St. Gall, report briefly in the same number of the "Centralblatt" that he has found salicylic acid to be a valuable antipyretic remedy in cases of enteric fever, erysipelas, acute articular rheumatism, etc. He promises further details on the subject.

Professor Thiersch, of Leipzig, has published an elaborate article in Volkman's "Sammlung Klinischer Vortrage" on Lister's treatment of wounds, and on the substitution of salicylic acid for carbolic acid. He speaks highly of the salicylic acid dressing, especially when used with jute, as being both less irritant and cheaper than Lester's carbolic acid dressing.

Dr. Hanow ("Berliner Klinische Wochenschrift") has for some months given salicylic acid in a number of cases of diphtheria, and strongly recommends its use in this disease. He uses a solution of 1 part of the acid and 1 of phosphate of soda in 300 o: water, giving a tablepoonfull to adults and a teaspoonful to children every hour. The medicine is to be swallowed slowly.—*Brit. Med. Jour.*

ANIMAL LIFE IN THE OCEAN-DEPTHS.

It was, for many years, thought that beyond the depth of three hundred fathoms, organic life ceased to exist in the ocean. Forbes reached this zero of life in the Ægean sea, and the fact ascertained for the Mediterranean was inferred for all other seas. The transmutation of inorganic into organic matter is only performed by vegetables, and then only under the controlling power of light. The distinction made by naturalists between the lowest forms of animal and vegetable life lies just here: vegetables convert the inorganic elements of earth, air, and water, into organized matter; animals rearrange this organized matter into animal tissue. It is well known, as no light penetrates the profounder oceanic depths, that no

vegetation can exist there; an absence of animal life was therefore inferred. Certain exceptions to this definition of vegetable life, as being exhaustive, are found in the *fungi*, which germinate and grow in darkness, and it is believed are nourished in great measure by organic matter, as well as in the curious carnivorous plants, which have of late attracted so much attention. This, however, does not invalidate the truth that all nutriment, in order to be fit for the maintenance of animal life, must pass at least once through the transmutation effected only by vegetation.

The non-existence of life below three hundred fathoms, in all the oceans of our globe, was strongly supported by Forbes's investigations in the Mediterranean. The abyssal depths of the sea were thus determined by logic to be the universal empire over which reigned darkness, desolation, and death. No investigations were made as to the facts of the case. Logic and a hasty generalization from inadequate knowledge were made once again in the history of science, to do duty for the more laborious method of patient observation. Commerce at last gave the impulse to deep-sea exploration, which had before been lacking. The commercial world demanded a more speedy mode of communication from continent to continent, and the response came in the form of the submarine telegraph. Thousands of soundings were made to determine the best position in the ocean's bed for its successful laying, and thousands again to secure the broken end after the first failure. These soundings and grapplings brought from the sea depths unmistakable proof that life in many varied and exquisite forms existed there, far away from light and vegetation, under an enormous pressure of superincumbent waters; and logic retired discomfited. —MRS. HERRICK, *in Popular Science Monthly for November.*

MODES OF SUICIDE.

In regard to occupation, clerks commit suicide the most frequently, about 34 in 1870, 1871, and 1872, and but 10 laborers in the same time. The percentage of laborers abroad is greater than any other. The mode of suicide most often employed in the city of New York is that of poisoning—212 out of nearly 600 persons have died from some form of poisoning. The preference seems to be for arsenic; usually its commonest form—Paris-green. In 1872, of 50 poisoning cases, 22 took Paris-green; the others chose either opium, carbolic acid, or other irritants. In 1871, 14 took Paris-green. Nearly all of the suicides chose violent and painful poisons, there being but few exceptions. One individual ended his days by hydrate of chloral; the other, a druggist, with prussic acid. Three took chloroform. Shooting ended the lives of 147 persons; 135 hung themselves. In only one or two instances was any ingenuity shown in the suicides: one of these individuals first shot himself, and then jumped out of the window; the other threw himself in front of an advancing locomotive. In London, hanging seems to have been the method most in vogue, for, in the year 1858, 56 persons perished in this way.

A. Brierre de Boismont, in his "Recherches Medico-Legale sur Suicide," Paris, 1857, collected 4,595 cases, carbonic acid gas and drowning being the favorite modes for self-murder with men, and strangulation with women. Of 463 suicides occurring in the year 1853, 92 men perished by carbonic acid gas, 93 by drowning, and 131 women died by strangulation. The more ancient statistics show that voluntary starvation was a common form of suicide in the beginning of this century. The motive for suicide in

the reported cases was extremely difficult to discover. Of the 463 cases in Paris in 1853, insanity produced the suicide of 53 men, 37 women; drunkeness, 48 men, 14 women; misery and grief, 20 men, 8 women; disappointed love, 28 men, 20 women; shame, 18 men, 9 women; domestic trouble, 18 men, 15 women; weariness of life, 20 men, 7 women; disease, 27 men, 19 women; fear of the law, 16 men, 2 women; ill-luck, 23 men, 14 women; trouble with parents, 5 men, 5 women; loss of situation, 8 men; loss of parents, 1 woman. By this table, it will be seen that insanity causes the largest number of suicides, both of men and women; drunkenness comes next, and disease third.—A. M. HAMILTON, *in Popular Science Monthly for November.*

NITRITE OF AMYL IN SEA-SICKNESS.

Mr. Crochley Clapham recommends (*Lancet*, August 21, 1875) the employment of nitrite of amyl as a remedy in the treatment of sea-sickness, and he does so, he says, with considerable experience of its utility. "During a trip round the world of nearly two years' duration, in which time I crossed the Pacific ocean in various directions no less than eleven times, I made the treatment of this distressing malady my especial study—with what result will be seen below.

"On my way out east I ran through all the prevalent modes of treatment, nice and nasty—such as iced champagne, bottled porter, camphor, chlorodyne, belladonna, ice to the spine, etc., and, with the exception of the last named, found them nearly all palliatives, and of very uncertain action even to that extent. With respect to Dr. Chapman's spinal ice bags, I can report favorably of their use in sea-sickness, when procurable; but people will not or cannot provide themselves with these articles, nor will shipowners supply them in any number, and nothing can be more futile than attempting to treat twenty or thirty sea-sick people with one or two ice-bags.

"As to the proximate cause of the malady, I entirely agree with Dr. Chapman that it consists of an undue congestion of the vessels of the spinal cord. On this point I had an excellent opportunity of drawing some conclusions from a post-mortem which I was fortunate enough to make while acting as superintendent of the Government Civil Hospital at Hongkong last summer. The case was that of a Chinaman who had been killed, while in the very act of vomiting during an attack of sea-sickness, by the fall of a heavy piece of iron from aloft. I found, on making the necropsy (four hours after death), that, leaving out of consideration the heart, which had been pierced by the falling iron, all the organs were healthy with the exception of the spinal cord, the vessels of which were literally gorged with blood throughout its entire length. I was struck with the similarity of this appearance to that presented by the spinal cord of an epileptic patient who died in the 'status,' and upon whom I made a post-mortem while at the West Riding Asylum, Wakefield. Coupling the post-mortem likeness to the resemblance which obtains in life between these two affections (pallor of surface, cold sweat, etc.) it occurred to me that the remedy which, in the hands of Dr. J. Crichton Browne, has proved so valuable in the epileptic 'status,' might be advantageously employed in the treatment of sea-sickness.

"To test the truth of this surmise I made several trips across the Pacific, and tried the remedy altogether in 124 cases. Of these, 121 proved eminently satisfactory, there being no return of the vomiting after the adminis-

tration of the nitrite; the remaining three cases being only unsatisfactory in so far as they required a further dose or two of the remedy.

"The mode of exhibiting the drug which I adopt is by inhalation, three drops of the nitrite being poured on a handkerchief and held close to the patient's nose. (More should not be used without medical advice.) The inhalation must be conducted rapidly, so as to give the full influence of the drug without a too free admixture of air.

"The action of the remedy in freeing the circulation and relieving the hyperæmia of the spinal cord will be quickly evidenced by a throbbing sensation in the temples (occasionally rather disagreeable) and by a more or less general flushing and increased warmth of the surface of the body. This warm and comfortable glow, which takes the place of the chilly sweat so disagreeable in this disease, is usually followed in the course of half an hour by a pleasant slumber, from which the patient wakes to eat a hearty meal. Should the sickness recur, which it may do after the lapse of twenty-four hours, the inhalation must be repeated. The patient should be in bed when under treatment, so as not to interfere with the subsequent sleep; and I have usually judged it better to allow one fit of vomiting to take place before applying the remedy, not only to insure the *bona fide* character of the seizure, but also because I consider it advantageous unless the patient be in a very weak state of health. I only met with one case in which the medicine was refused on account of disagreeable effects, and in this instance, which occurred in the tropics, the patient complained that 'it made him feel so hot he would rather be sea-sick.'"

EXPERIMENTS ON THE BRAINS OF MONKEYS.

A paper on this subject by Dr. David Ferrier, of London, was presented at the late meeting of the British Medical Association (*British Med. Jour.*, Aug. 28, 1875). The experiments on which the following conclusions are based were supplementary to those of the electrical irritations of the brains of monkeys, already published in the *Procceedings of the Royal Society.* They were recorded in detail in the Croonian Lecture read before the Royal Society in May last. In the absence of Dr. Ferrier, Dr. Lauder Brunton gave a brief summary of the main results. The method followed was the comparison of the effects of electrical irritation with those following localized destruction of parts of the brain by means of the actual cautery and scalpel. The two sets of experiments supported and explained each other. The most important fact demonstrated by this series of experiments was the localization of regions of special sense in the convolutions; and this, along with localization of centres of motion proper, served to clear up the true significance of the reactions to electrical stimulation.

1. Destruction of the frontal regions of the brain, which gives no reaction to electrical stimulation, is without effect on sensation or voluntary motion, but causes marked impairment of intelligence and of the faculty of attention.

2. Destruction of the gray matter of the convolutions bounding the fissure of Rolando causes paralysis of voluntary motion on the opposite side of the body, sensation remaining unaffected; while lesions circumscribed to areas, previously localized by the author, caused paralysis of voluntary motion limited to the muscular action excited by electrical stimulation of the same region.

3. Destruction of the angular gyrus causes blindness of the opposite eye,

the other senses and voluntary motion being unaffected. This blindness is only of temporary duration, provided the angular gyrus of the opposite hemisphere remains intact. When both are destroyed, the loss of visual perception is total and permanent.

4. Destruction of the superior temporo-sphenoidal convolutions abolishes conscious reaction to auditory stimuli, the other senses and voluntary motion remaining unaffected. The results of destruction, taken with the effects of electrical stimulation of this region, indicate that it is the centre of auditory perception.

5. Destruction of the hippocampus major and hippocampal convolution abolishes the sense of touch on the opposite side of the body.

6. Destruction of the *subiculum cornu ammonis*, taken with the results of electrical stimulation, indicates that this is the seat of the sense of smell for the same side of the body.

7. Destruction of the gray matter of the lower part of the temporo-sphenoidal lobe in immediate relation to the region of olfactory perception abolishes the sense of taste.

8. Destruction of the optic thalamus causes complete anæsthesia of the opposite side of the body.

9. Ablation of the occipital lobes produces no effect on the special senses or on the powers of voluntary motion, but is followed by a state of depression, with refusal of food, not to be accounted for by mere constitutional disturbance. In one case, which survived the operation for three weeks and was then killed, the appetite returned: a phenomenon probably to be accounted for by compensatory association. The sexual appetite, however, was exhibited during the first few days after the operation, as judged by the behaviour of the animal to a companion monkey.

10. Ablation both of frontal and occipital lobes in one monkey did not interfere with the powers of sensation or of voluntary motion.

GELSEMINUM SEMPERVIRENS AS AN ANTI-NEURALGIC.

In the "Centralblatt fur die Medicinischen Wissenschaften" for July 10, Dr. A. Jurasz, of Heidelberg, has a contribution on the therapeutic action of gelseminum sempervirens. After some introductory remarks on the drug and its preparations, he gives a brief record of five cases of neuralgia in which he used it with success. In the first case, a strong man aged thirty had suffered for some weeks from neuralgia of the first division of the fifth nerve, which was only temporarily relieved by the internal use of quinine and the external use of veratria ointment. All other treatment being omitted, tincture of gelseminum was given in five-drop doses three times a day, and the patient was quite cured in three days.

In the second case, a seamstress, aged thirty, had had partial neuralgia for more than a year and a half. It had been treated by spirituous application, also by liniments, and by iodide of potassium internally, with only transient benefit. The patient was cured in six days by the tincture of gelseminum, given in four-drop doses three times a day.

In the third case, the patient was a man aged sixty-four, who had for some days had severe neuralgia of the left supraorbital nerve. A cure was produced in four days by the use of ten drops of the tincture three times daily.

The fourth patient was a healthy woman aged thirty-eight, with neuralgia of the first and second divisions of the fifth nerve on both sides. The affec-

tion had lasted eight weeks, and was becoming more intense. Perfect recovery followed the use of five drops of tincture daily for two days.

In the fifth case, a strong man aged sixty was confined to bed by severe sciatica on the right side. On the eighth day, various remedies having been tried in vain, all other treatment was omitted, and the tincture of gelseminum was given in doses of eight drops three times a day. In fifteen days the pain had nearly left him, and he was able to walk with a stick. Recovery was quickened by the use of the constant electric current and warm baths. Dr. Jurasz has also given gelseminum without result in a case of hemicrania of long duration, and in two cases of muscular rheumatism. He has not been able to observe any special effect to be produced on the organism by the gelseminum.

Clinics Cincinnati College of Medicine and Surgery

CLINICAL LECTURE.

By A. J. Miles, M. D., Professor of Diseases of Women and Children in the Cincinnati College of Medicine and Surgery.

Reported by T. M. Wittkamp, A. M., M. D., Dispensary Physician.

Gentlemen:—The case I present for your consideration to-day is one of great interest, from the fact that, as the doctor tells me, she has the symptoms simulating a variety of diseases As I have not seen the patient before, the doctor will please read the history of her case, that we may all better comprehend the nature of the difficulty under which she is suffering.

"October 6, 1875, Miss A. S. aged 23, single, domestic; born and raised in Cincinnati. Her parents are dead. Father died of phthisis; mother of heart trouble. Has some brothers and sisters, all of whom are enjoying good health. She has been sick more or less during her life. When nine years of age was taken with rheumatism followed by some heart disease, which was relieved under judicious treatment. At the age of eighteen she was for some cause or other kicked in the epigastric region, and was unconscious for a week; blood came from her mouth, and she spits up some occasionally yet. From that time she traces her troubles. She likewise was treated in the college dyspensary for syphilis last term.

Present Condition.—A young woman below average heighth, dark complexion, fairly developed, well nourished, constantly tossing about on her chair, appetite fair, bowels costive. Tongue somewhat redder than natural and fissured. Some pain in her stomach, more so after meals, vomits occasionally a white clear fluid, enormous eructations of wind at times. She feels a lump in her throat with choking sensation. Has attacks of headache. Abdomen is enlarged as if nine months pregnant and very tense. All the special senses are in good tact, with exception of some dimness of vision.

"*Physical examination* shows that her breast inclines forward; respiratory movements irregular, sometimes very deep and laborious, and sometimes natural; normal to percussion and auscultation. Abdomen is very large and swollen, very tense and somewhat tender when touched, but when her attention is called away to something else it relaxes and becomes the natural size. She says she cannot pass her urine, and has to have it drawn with a catheter every day; it is of normal quantity, color, and reaction. She is

frequently subject to convulsive paroxysms or fits. States, likewise, that she has a pain in her back and a white discharge from her vagina. The labia are red and excoriated; along the left labia majora are some venereal warts and cicatrices. The vagina, on digital examination, tough and hot, the uterus prolapsed, cervix swollen, mucous membrane congested and on the point of ulceration."

Gentlemen, you have now heard the history of the case, and you see how complicated it is; is therefore becomes necessary for us to investigate some of the most active symptoms complained of. Among those symptoms are most prominent the distention of the stomach, and occasional distention of the bowels. As these enlargements are transitory, their cause is readily attributed to hysteria. It is necessary to examine the condition of the genito-urinary organ to ascertain the nature of the derangement that seem to exist in the case.

For this purpose we will first make a digital vaginal examination. (The patient was placed on the operating table, the Professor explaining the methods of examination.) By means of this examination we wish to ascertain what departure there is from the normal condition. Indeed, gentlemen, the vaginal touch constitutes one of the most important means of exploration at our command. We ascertain by it the presence or absence of tumors in the vagina or pelvis, presence or absence of inflammation of the parts, and the condition and situation of the uterus. I now pass my finger into the vagina and find the uterus very greatly prolapsed, so that the os is within one inch of the vaginal outlet. I pass my finger along the posterior surface into the recto-uterine space, to ascertain if there is uterine enlargement, retro-flexion or retro-version, or fibrous tumor, scybala in the rectum, inflammatory products the result of peri-uterine cellulitis or peritonitis, a prolapsed ovary or ovarian tumor, or an hematocel; and the principal abnormal condition I find by this examination is retroversion of the uterus, which you must always have when the uterus is prolapsed to such a degree as we have in this case.

I now pass my finger anteriorly along the base of the bladder toward the symphysis pubis, but find no tumor, uterine enlargement ante-flexion, or ante-version, or cellulitis. By lateral pressure I find no abnormal condition of the ovaries or pelvic areolar tissue. I next examine the os and cervix in reference to size, density, consistency of lips, and character of discharge; and find the cervix enlarged, indurated, and the os patulous and in portions rough to feel, indicating some abrasions. I now place my left hand on the lower part of the abdomen, and with the index and middle finger of my right hand I press the uterus in the direction of the axis of the pelvis, and with firm pressure with my left hand the fundus approximates the abdominal walls so its size and form can be ascertained; and I am happy to announce there is no enlargement or increased sensitiveness of the fundus or body of the organ.

We next introduce a Cusco-speculum, and bring into view the os and cervix, which each one of you can now as you pass by have the opportunity of seeing, and which you observe to be enlarged; the mucous membrane abnormally red and congested; indeed, in a state of chronic inflammation, with patches of abrasions within the borders of the os from which, in some places, the blood is oozing. By a careful inspection of the meatus urinarius and surroundings, we are unable to find any abnormal condition beyond some patches of chronic inflammation in the mucous membrane of the vulva the result of secondary syphilis. The doctor finds no obstruction to the entrance of the catheter in the bladder. The quantity of urine withdrawn at each time is about three ounces, and is normal in color, reaction,

and specific gravity. Hence we conclude the suppression of the urine and dysuria complained of is of hysteric origin. It is evident, gentlemen, that the active symptoms in this case are due to hysteria.

Hysteria is a disease or condition of the system resulting from reflex action, and which occurs most frequently in women between the ages of fifteen and twenty years. It is an affection neither of early childhood nor of advanced life, but develops itself during the child bearing period; it may but seldom occur before or after the menstrual period, and occasionally occurs in the male sex. The ancients attributed hysteria in part to certain wanderings of the uterus, imagining that this organ, or an aura from it passed from one portion of the system to another, and thus caused the hysteric paroxysms; or that hysteria proceeded directly from the brain—hence the doctrine taught which you will read in the books of uterine hysteria and cerebral hysteria.

Hysteria is an effect, a reflex nervous derangement, traceable in most instances to disease or irritation of the sexual organs. We have proof for this assertion in the interesting statistical tables of Landowzy, who found in the autopsy of thirty-nine persons affected with hysteria, and who died of some other affection, that twenty-nine of these had structural disease of the uterus or its annexæ. Some of the remaining ten cases may have had functional derangement of those organs. Then again, of twenty-seven cases of hysteria examined during life, twenty-six were affected with disease of the uterus or annexæ. There seems to be two ways or methods in which hysteria may originate. The one class is from cases in which the irritation or disturbance proceeds from within, and where there is an *internal* organic disturbance. The other class is from exciting *external* emotional disturbance; thus, the reception of distressing news, fright, an alarming piece of intelligence, a mental shock of any kind, may originate in a woman who is predisposed to this condition called hysteria.

The organic or internal causes we generally find to proceed from uterine disease; and this form of hysteria is more or less chronic, and more or less constantly present, in consequence of the continued exciting cause. In many of this class of cases the hysteria disappears when the uterine disease is cured; and for this reason, gentlemen, we must not regard hysteria under the control of the patient's will any more than we regard tetanus, which is a disease also of reflex action, is under the control of the patient's will.

Many women are laughed at and jeered for being afflicted with hysteria; but you would not think of laughing at a person for having tetanus, yet they are both diseases of reflex action; one may be produced by a slight external wound near a joint, or a prick from a nail or splinter in the hand or foot, while the other may proceed from a flexed or otherwise diseased uterus, the active and alarming symptoms of both being due to reflex action. Therefore, this condition of the system, these assemblage of symptoms called hysteria, require close and careful investigation. In a case before you there was no hysteria until after the generative organs were fully developed and active, and no doubt not until they were diseased.

The abnormal condition of the uterus that I have fouud most frequently exiting hysteria is flexion. In cases of flexion you so frequently have dysmenorrhea, and during the dysmenorrrheal attack you are so liable to have the worst form of hysteric convulsions produced. Prolapsus of the uterus with retro-version causing undue pressure on the sacral nerves is a frequent cause of the disease. Any dislocation, inflammation, congestion, ulceration, or other structural disease of the uterus, besides functional derangement, may cause hysteria. Women of extreme nervous susceptibility are much more predisposed to hysteria than those of a more equable tempera-

ment. Some pathologists have contended that hysteria was due to spinal irritation, but spinal irritation is more frequently the effect instead of the cause of hysteria. Both in organic and functional disturbance of the uterus there is very often tenderness of the spine, and in this way, through the afferent nerves, the spinal cord may become secondarily affected.

The symptoms of hysteria are various, differing very much in different cases, as well as in the same case at different times. The symptoms preceding an attack of paroxysms are often depression of spirits, nervousness, frequent desire to urinate, spells of laughing, crying, palpitation of the heart, the peculiar sensation of a ball in the throat, called the *globus hystericus*, a sense of suffocation, headache, pain, or a burning sensation in the head confined to one spot, etc., etc. Tympanitis intestinalis is often an accompaniment of hysteria, and in this case is a prominent symptom. Also distention of the stomach by wind; and now, as I call your attention to the case before you, and begin to talk about the condition of the stomach, the patient, as you see, sets up a series of jactitations and gulpings, with pretended difficulty of breathing, until she swallows so much air that her stomach becomes distended as large and hard as your head. In a little while, when the patient's attention is diverted to something else, she will have eructations of wind, when her stomach will be found emptied and normal in size. This is one of the symptoms of hysteria that is under the control of the will. Touch, pain, and temperature may be separately or collectively increased, diminished or lost.

Sight, smelling, hearing and taste may also become affected, either increased to an intense degree, or entirely suppressed or diminished during an attack of hysteria; or these senses may be perverted so that the most disagreeable odors are welcomed, while the odor of a rose is intolerable, and the most disgusting tastes coveted. Every variety of paralysis of the motor, sensitive, or sensorial nerves may occur during a paroxysm and continue days after. Or again we may have a state of hyperesthesia of a whole or part of the body. In a paroxysm of hysteria the muscles of animal life will be involved in both clonic and tonic spasms, which may extend to the whole body or only effect a portion, often confined to the limbs of one side. There is seldom entire, but sometimes partial, loss of consciousness.

The paroxysm may simulate the character of epilepsy, chorea, hydrophobia, coma, mania, strychnia poisoning, besides having every perversion of the functions of voluntary motions and muscular rigidity. The pulse, in this disease is usually slower than normal, but not otherwise affected.

Gentlemen, in the *treatment* of hysteria the indications are twofold: 1st, To relieve or ameliorate the susceptibilities or active symptoms of the case; and 2nd, to remove the exciting cause. If we should find organic or functional disease of the uterus, we should direct our treatment to the removal of those conditions, and at the same time to build up the general nutrition of the nervous system. Palliative measures should be resorted to for the purpose of relieving the distressing symptoms presented in any case. Flatulency may be treated with cordials and antacids. Dyspepsia relieved by pepsin and bismuth. Chloroform liniment may be used to scatter local pains. For the nervous symptoms the so-called nervines, or those remedies which seem to act specifically upon the nervous system, may be used, such as castor, valerian tea, hartshorn, assefetida, burnt feathers, and other evil-smelling and ill-tasting articles. The chloride of sodium and gold, quinia, and strychnia, are more permanent nervous tonics, and in my hands have been much more efficient in restoring tone to the system than the so-called nervines. Galvanism is the most successful remedy in paralytic hysteria.

For the relief of paroxysms of hysteric convulsions a variety of methods have been recommended. Chloroform inhalation is very effective. Hydrate of chloral may control some cases. I entirely discard the ordinary routine treatment of giving valerian, costoreum, assefetida, ether, musk, camphor, burnt feathers or other strongly-smelling substances, as positively useless, and I think, in many cases, injurious. For the relief of hysteric convulsions, or the premonitory nervous symptoms of threatened convulsions, I invariably administer the *wine of tobacco*, and have always succeeded in preventing the convulsions when threatened, and controlled them in a short time when they are present. Not only this, but it seems to put to rest any return of the paroxysm.

In a paper I read before the Cincinnati Academy of Medicine, November 2, 1868, I first called the attention of the profession to the power and certainty that tobacco has in controlling the reflex action that exists in tetanus.

Then again I read another paper before the Academy of Medicine, December 19, 1870, on the treatment of hysteric convulsions and catalepsy, wherein I again demonstrated by cases the powerful action of tobacco in perfectly controlling and relieving these conditions of the system. Since that time I have had numerous cases that have readily yielded to this treatment, and therefore demonstrating the correctness of my theory of the condition of the nervous system in those cases, and of the mode by which medicines should act in order to give direct relief.

I have just stated that hysteric convulsions were due to irritation of the motor nerves, which caused contraction of the muscles of motion, and which resulted in convulsions. Now the *modus operandi* of the action of the tobacco is first by direct irritation of the nerves of the alimentary canal, followed by muscular contraction, as evinced in vomiting and the peristaltic action of the bowels. And besides this *direct* action there is *secondary* or reflex action on the motor nerves, a species of temporary paralysis, resulting in relaxation of the muscular fibres of animal life, and therefore overcoming the contraction that exists in these muscles during hysteric convulsions and catalepsy.

The action of the tobacco is so decided and powerful that it seems to break up this *habitat* of nervous excitability and irritability and has a more lasting and permanent effect than any other agent I have seen used in the disease. I usually prescribe one teaspoonful of the wine of tobacco, which is equivalent to about four grs. of the natural leaf, repeating the dose every hour until the muscular system is completely under its relaxing influence. The wine, which is a very pleasant and efficient preparation, should be made of the natural leaf. Havanna is the best, and made according to the U. S. Pharmacopœa.

Catalepsy, which occasionally accompanies hysteria, is, in reality, an aggravated form of an hysteric paroxysm, in which all the motor nerves are in a state of medium excitement, and hence *all* the muscles of the body are in a state of contraction sufficient to counteract the resistance afforded by the weight of the limbs. Therefore if we place a limb in any given position, at any angle, flexed or straightened, it will remain, unsupported, in that position for a long time. This results from the contraction of the antagonistic muscles, which causes the limbs to preserve their equipoise.

In these cases consciousness is almost always entirely suspended, and also sensibility to external impressions. The pulse, the beat of the heart, and the respiratory movements are usually so feeble as scarcely to be perceptible. This condition may continue a few moments or hours only, or may last for several days. This condition simulates death so completely that it is in such cases that patients are in danger of being buried alive.

Notwithstanding the old caution not to interfere with paroxysm of catalepsy, I invariably give t..em wine of tobacco, either by the mouth or per rectum, and always with the happiest results. After one, two or three doses the patient begins to breath fuller, the heart's action is increased, and the extremities and surface, that were cold and bloodless, soon become warm.

When the medicine is given to the point of nausea complete relaxation occurs, consciousness is restored, and the patient makes a rapid recovery. Relapses seldom occur, and when the precursors of a cataleptic fit are approaching, by a judicious administration of the tobacco the paroxysm can be prevented. The treatment of the case between the fits must be addressed to their apparent cause, hence no fixed rule for your guidance can be given, more than to remove the exciting cause and restore tone to the general nervous system.

Microscopy.

WIDE vs. LOW ANGLED OBJECTIVES--SUPPLEMENTAL PAPER.

By J. Edwards Smith, Ashtabula, O.

In one of my former papers (in Medical News, March, 1875) I called attention to the fact that most microscope stands were fitted with stages too thick for work with oblique light.

Very few microscopists are aware of the extent of mischief thus caused, and consequently blame their objectives, when in fact the stage alone is in fault.

A few weeks ago I visited a friend who had just purchased a new (and in many respects a first class) stand; the stage admitted a pencil of 70° (from axis); the mirror, being mounted on radial arm, gave necessary means of very oblique illumination. With this stand and my Tolles' 4 sytem 1-10th, I attempted to show the Moller probe platte. On No. 18 lines were seen distinctly on lower portion of the valve; on No. 19 the striæ were but feebly shown; while No. 20 entirely defeated my most patient manipulations.

A few days after this my friend paid me a short call. With the same objective on my own stand, which admits a pencil of 82°, I showed him, I may say instantly, the striae of Nos. 18, 19, and 20 of the same platte. The resolutions were strong, demonstrative, and could be seen with eye pieces from 1 inch to 1-4 inch solid. Nor was there any "trick of illumination" used. The lines were seen with the mirror in half a dozen different places, varying from 50° to 80°, by estimation of course.

In both instances above narrated the illumination was furnished by an ordinary German student's lamp. I may further add, that with the same objective and my own stand, it is by no means a difficult task to show No. 20 with a pencil of only 45° from axis, yet should another stage be substituted, admitting a pencil of 55° only, the objective would at once be defeated.

Apropos of this, Mr. Wendham stated in *London Microscopical Journal*, that just as he was proceeding to *test* (?) the Tolle's 4 system 1-6th, belonging to Mr. Crisp, over the Moller probe platte, he could *glimp.e* (!!!) striæ of equal difficulty with another glass of 120°

Now, as the 4 system 1-6ths *are known* to go readily through the Moller

platte, the presumption is that Mr. Wendham used a stage thick enough to defeat the action of the 1-6th—almost as big a blunder as when he attempted to adjust Mr. Stodder's 1-10th (that unfortunate 1-10th) over podura, using the 1-10th as a *dry lens*.

Those of our readers who have wide angled objectives and stands with thick stages, can easily improvise a supplemental stage by cutting out the ends of a small card box (about 3-4 of an inch high), and also "a well hole" out of the cover, and pasting a ledge on the top to hold the slide. In this case the illumination must be direct, *i. e* without mirror. A common kerosene lamp carried in the hand answers admirably.

MEMPHIS, TENN., Oct. 16, 1875.

DR. J. A. THACKER:

Dear Sir:—In the May number of your Journal in the condensed report on angles of aperture and objectives from the committee appointed by the Memphis Microscopical Society, there was an important clause omitted by yourself or printer.

After m king experimental observations on certain test objects, we decided that the wide angles excelled the narrow angles in our trial; and we came to the conclusion that the wide angles were better as a rule for some work than the narrow, but not for all. Mr. Dod, our Secretary, is the member who makes no exceptions to the rule in subsequent papers. I know full well that for many kinds of work that narrow angles are altogether better than wide angles, other things being equal.

S. P. CUTLER, Chairman.

SAN FRANCISCO MICROSCOPICAL SOCIETY.

The stated meeting of the San Francisco Microscopical Society was held on Thursday evening, October 7, with President Ashburner in the chair, and a good attendance of members, while the following named gentlemen were present as visitors: Dr. Wm. H. Jones, U. S. N.; F. Wilk'ns, London; A. Mahony, Geo. Thurnbull, W. N. Lockington, N. Newark and R. J. Bush of this city.

Copies of the *World of Science* and *Nature* were donated to the Library, and the Cabinet received additions in the way of a slide mounted by Dr. S. M. Mouser, with the muscular fibre of an ox, showing characteristic striations; flint from Cape Prince of Wales; clay from the bottom of Yuckon river, and red mineral paint all from Alaska, by Mr. Ewing; crustacea, etc., cases, and young of a violet snail (ianthina) taken from dredgings and at sea by Dr. Wm. H. Jones. Dr. Jones also donated a specimen of *noctiluca*, which was placed on the stage by Dr. Harkness, who stated that this was one of the animals which produces the so-called phosphoresence of the sea, and which he removed to exhibit the *trichobasis betæ*. This was shown in *situ* on a beet leaf, and also by means of a transverse section of the leaf the spores of the fungus were shown. These spores germinate beneath the cuticle of the leaf, increasing in large numbers and forming a tubercle of some size. The spores are tastened in place by a short foot-stalk, and at maturity the puffball-like body is ruptured at the apex, discharging its spores covering the lea with a dark-brown powdery layer. Dr. Harkness stated that this fungi may be observed by the unaided eye upon the beet-

leaves now in market; and further remarked that unlike its many fungoid relations, it does not appear to be of any great detriment to the plant on which it is developed.

Mr. Hyde exhibited one of Nachet's laboratory microscopes, and also one of Nachet's section cutters

The *phylloxera*, the ravages of which among our vineyards is causing so much stir of late, next received the attention of the Society. Mr. Ashburner exhibited a slide from his collection of objects, mounted with one of the destructive pests, which was at one time an inhabitant of France; while another, mounted some weeks since by Mr. Kinne with several of our ho e production, was then placed on the stage, and from the comparison their identity was fully established. This examination called out remarks from many present, among whom Dr. Blake, who has also been giving the matter some attention, spoke of the fact of his receiving from a vineyard where he had seen many dead and dying vines, a number of the roots. His study of them convinced him of the fact that there are other causes of disease in our vines beside the phylloxera. As regards the means of preventing the insect destroying our vineyards which it threatens to do if unchecked, he thinks the prospect is more hopeful than the want of success that has attended the efforts of the European vinegrowers might justify, for he believes, in the first place, that their efforts have been made in a wrong direction; and again that the climate of California will enable us much more effectually to combat the diseases than can be the case in Europe. As regards the direction in which we can most effectually hope to check the spread of the diseases, he believes the only way at least in this country is to endeavor to confine the disease within the limits where it already exists. When, as mentioned in some remarks he made at the Academy of Science on the subject, we find the insect in an apparently perfectly healthy vine at a distance on the roots of four feet beneath the surface, it is useless to hope to be able to destroy it by sulpho-carbonates or any other insectides. At such a depth below the surface it is evidently beyond our reach, and judging from the reports of the French Commissioner on this subject, it is equally beyond their reach in France, where owing to the climate the roots of the vine keep much nearer the surface than with us. When a vine is once diseased, he believes, it is only a question of time as to when it is to die, and the better plan is to let it die and replace it by another as soon as it is too sickly to bear fruit.

As to the remedies, which is certainly the matter of vital interest if any can be found, Dr. Blake, after speaking of the probable manner in which the insect is propagated, offered some valuable suggestions, which he gave somewhat more at lenghth than before the Academy of Sciences, relative to the manner of preventing the fully developed insect from extending the area of the disease. He said: "All, th n, that is required to check the spread of the disease is either to prevent these winged individuals reaching the surface of the ground or to prevent their reaching the leaves of the vine should they make their way above ground. As the only road they can travel is the stem of the vine, the problem, I think, will not prove to be very difficult. It is possible that merely putting train oil or coal tar, or some other substance that is disagreeable to them, on the stem of the vines, a few inches under ground, may prevent their coming to the surface; or placing some fine sharp sand round the upper part of the root may so far fill the crevices in the bark as to oppose a mechanical obstacle to their progress; or the bark might be covered for a short space with some glutinous substance, such as is used for fly-papers, and on this they would be caught. They certainly can be prevented from reaching the leaves by attaching a

piece of thin gauze or muslin, in the form of a cone, round the stem, a few inches above the ground, and covering the lower border of it with earth or fine sand. These are means that are practicable and which do not involve any great expense, and I have no doubt but that some, or anv of them, may prove efficacious, at least in light, dusty soils. What, however, is now required is a fuller knowledge of the natural history of the insect, more particularly as regards its habits in our own State. We want to know, for instance, at what season of the year the winged insects are developed—how many generations can be produced independently of impregnation, if the extension of the area of the disease is at all connected with the direction of the wind, the rapidity with which it can extend on a vine when it has once attacked it, the locomotive powers of the insect on moist ground, and if its ova, or the insect itself, can be carried by the rain. These, and many otner questions, require to be seriously and scientifically investigated, as we can be sure the more we know of the nature and habits of the insect, the more successful we shall be in restraining its ravages."

MEMPHIS MICROSCOPICAL SOCIETY.

S. P. CUTLER, M. D., President.

It has been truly said that the science of microscopy consists in the enlargement of vision, the chief source of all sensual knowledge.

This science opens to view the invisible and hitherto inscrutable domain pertaining to the earth's surface.

Who will to-day deny that the microscope is not truly an instrument of revelation, by the means of which many of the hidden mysteries of creation are revealed or unveiled?

Microscopy is now a legitimate study in many medical and other institutions of learning. Societies are springing up in different places, and an increased general and special interest manifested throughout the land on the subject.

Much light is being daily added to our limited stock of knowledge by this science.

The cause of many diseases are interpreted and diagnosed; the nature and character of many malignant diseases pointed out by the aid of the microscope, thereby aiding in the relief of suffering humanity; in many instances relieving the mind from horrible anticipations; in others showing the danger where none is anticipated.

Criminals are often detected by blood stains, spermatazoa, and other ways by the aid of the microscope.

It should be the physician's vade mecum. By the aid of the instrument invisible structures of plants and animals are brought to view and comprehended; also, the mineral domain; infinitesimal creation studied, with equal facility as visible nature. The amateur and dilettante find infinite fascinations in diatoms and other lighter studies not necessarily professional.

When our society was organized, one year ago, it was thought to be more an experiment than an anticipated success and reality, owing to the novelty of such an enterprise in the South—it being the first organization of the kind in the southern country.

But, from the start, it succeeded far beyoud the anticipations of the most sanguine, commencing with a list of a dozen members, which subsequently increased to over thirty, with a list of thirty-two corresponding members from various sections of the country, from Boston to San Francisco.

These corresponding members, I must say, have done more for our society than our home members. This is owing to the fact that most of us were inexperienced beginners, though we have been doing good work considering our limited means and experience.

Through our corresponding members we have received a valuable collection of slides and unmounted material, giving us a very respectable cabinet, containing many rare and beautiful specimens from all parts of the world, which we hope greatly to enlarge ere another twelve months.

We have purchased a valuable instrument, with extensive accessories, sufficient for all practical purposes. During the twelve months a number of creditable papers have been presented and read by the active members; still more from our corresponding members, to whom we are under lasting obligations for the interest they have shown to us.

Some of our members have fine instruments, including objectives of the latest improvements, *i. e.*, the four system of high powers and angles.

Although not much was done during the hot months, greater anticipations are ahead for the fall and winter labors.

DUNKIRK (N. Y.) MICROSCOPICAL SOCIETY.

The regular meeting was held Friday evening, October 8th, 1875: President Blackburn in the chair. The report of the Secretary and Treasurer was read and approved, and various bills were audited and ordered paid.

The President reported addition to the library of "A Synopsis of the Described Lepidoptera of North America," from the Smithsonian Institution, Washington, D. C.

Professor Babcock, of the Fredonia State Normal School, was proposed as a regular member.

Dr. C. P. Alling presented an amendment to the constitution, providing for the election of corresponding members, which went over till next regular meeting under the rules. Dr. Alling was appointed essayist for the next meeting; subject, "The Diurnal Lepidoptera in the Society's Collection."

Rev. M. Adams presented a plan for a cheap and convenient cabinet for microscopic objects, which met with general approval.

The meeting having been specially devoted to the transaction of routine business, no regular essayist had been appointed. The President made some brief remarks on "Tests for high power definition," with particular reference to the investigations and ideas of Dr. Royston Piggott. Dr. Piggott's objection to the use of the scales of insects, frustrules of diatroms, and other minute objects whose real appearance was unknown, were briefly stated, and his experiments in regard to examination of diminished images of known objects, such as a watch face, were repeated with some modifications. A microscope was placed in the vertical position, and a small watch hung at a distance of 100 inches from it, the rays of which were reflected from the plain mirror through an immersion of 1-10th of 135° reversed upon the stage. The image thus formed was examined with a 1-10th of 160° in combination with various eye-pieces. Notwithstanding the increased liability to error from the interposition of the mirror, the results were far more satisfactory than those reported by Dr. Piggott, as the image of the watch face was seen beautifully defined, with all the markings for minutes and seconds clearly visible. Both objectives used in this experi-

ment were made by Mr. William Wales. After a brief discussion of the President's remarks the Society adjourned.

BIOLOGICAL AND MICROSCOPICAL SECTION OF THE ACADEMY OF NATURAL SCIENCES.

Philadelphia, September 6th, 1875.—Director W. S. W. Ruschenberger, M. D., in the chair. Present, Drs. Leconte, Norris, Kenderdine, J. G. Hunt, Reed, Seiler, and Richardson. The minutes of the last meeting were read and approved.

Dr. Hunt, as curator, reported the arrival of Nobert's nineteen-band test-plate, purchased in accordance with a previous resolution of the Section.

The Secretary, in the absence of more important subjects for discussion, inquired what was the experience of members present in regard to the diagnostic value of a microscopic deposit in the urine as indicating the nature of renal calculus in cases where these tormenting bodies obstruct the ureters.

Dr. Reed stated that in a case which he had recently cut for stone in the bladder, the urine was loaded with phosphates, and the calculus, when removed, proved to be phosphatic.

Dr. Seiler mentioned that in one instance he had found a scanty deposit of dumb-bells of oxalate of lime in the urine of a patient from whom a mulberry calculus had been removed by lithotomy two weeks before.

Dr. Hnnt thought it very unsafe to make a diagnosis of the nature of a calculus from a deposit let fall from the urine. For himself, he was not a convert to the doctrines of urinary pathology; certain sediments are found in the urine, it is true, but how they get there, and what pathological significance, if any, they possess, is still quite problematical.

Dr. Leconte observed that since calculi were often composed of several different layers, varying in constitution, it was obviously impossible to diagnosticate correctly the nature of such stones by examination of the urinary deposit which accompanied any one period of their formation.

Dr. Kenderdine stated that in suudry severe cases of stone in the bladder, now under his observation, it was not uncommon for deposits of oxalate of lime and uric acid to replace each other at short intervals, and in one instance, where a small uric-acid calculus had passed from the kidney of a patient, he had found the next day's urine loaded with octahedra of oxalate of lime. So far as he was aware, renal calculi were homogeneous in the constitution.

Dr. J. G. Hunt exhibited a beautiful specimen of "fire-blight" or "black-rot" from a branch of a pear tree, and remarked that the fungus causing the fire-blight attacks the epidermal cells of the tree first, and the black color is caused by innumerable pigment-granules deposited in these cells. The pigment-deposit is found most abundantly in the cambium layer of the bark on the ground branches.

A thin transverse section shows a black ring at the cambium layer, looking not unlike the pigment-layer in the rete-mucosum in the skin of the negro.

The fungus penetrates the branches first through the medullary rays, and here we often find some type of reproductive organ of the parasite, so clearly unlike any normal growth in the pear-tree as to leave no doubt of its fungoid origin. Moreover, the presence of pigment-granules in the

epidermis is the first optical evidence of disease. Therefore it is safe to conclude that a fungus is the specific cause of "fire-blight" in some pear-trees.

Dr. Richardson inquired if Dr. Hunt's studies of this parasite threw any further light upon the great question as to whether fungi were the cause of decay in animals and plants, or only developed in consequence of a lowering of vitality, the result of previous disease?

Dr. Hunt doubted whether we were yet competent to decide upon any of the so called causes of disease.

Dr. Richardson inquired whether Dr. Hunt believed that the acarus scabiei was the consequence, or the accidental complication, or anything but the essential and efficient *cause*, of scabies?

Dr. Hunt replied that if he should ever be unfortunate enough to contract the complaint he might then be able to answer that question.

ON IMPROVEMENTS IN ILLUMINATION.

27 MONTAGUE ST, EDINBURG, August 30, 1875.

To the Editor of the Monthly Microscopical Journal:

SIR,—Whether the present controversy on angular aperture and the rival merits of English and foreign lenses may, or may not, result in enlarging the defects while minimizing the excellencies of our objectives, or whether the differences between the dot-showers and the Valentin-knife men, where the one party looks for glasses having only one definite focal plane, and the other for such as have half-a-dozen planes at once, are likely to be adjusted by a prize glass to be constructed under the superintendence of the "R. M. S.," which shall in some mysterious way combine both those idiosyncrasies, is a question I care not to meddle with. My purpose here is, not to obtrude opinions on others, but rather to seek advice and assistance in a matter, the importance of which is incontrovertable. I am alluding to improvements in illumination.

There are, of course, other points in which I should like to see improvement, or, at least, the liberty of choice afforded us; for instance, I should like to see some portion of that careful correction, which is said to be lavished on our objectives, extended also to eye-pieces; and some contrivance hit upon to enable the diaphragm with its iris arrangement, instead of being a fixture, as at present, to be smoothly traversed from left to right, at right angles to the axis of the tube, so as to combine oblique illumination with complete exclusion of all extraneous rays, and this without adding materially to the thickness of the stage.

But these, I suppose, are things rather to be hoped for than expected.

With regard to illumination, though I have hunted through divers works to find what I wanted, my search has hitherto been fruitless. They either recommend specialties of limited application, or their experiments are like those of Mejnour in Bulwer's "Zanoni,"—successful, it is true, in their own hands, but with the finishing touch concealed.

Many persons have a strong prejudice against all sources of illumination with which glass,—especially quicksilvered glass,—is mixed up, as invariably introducing disturbing elements, which it is the worker's business immediately to get rid of. Compare Dr. Pigott's remarks in the "M. M. J." vol. xiii, pp. 152, 177. Therefore I have been thinking whether some improvement in this direction might not be affected by substituting for our

present concave mirror of quicksilvered glass,—at least as an optional alternative,—a concave surface of some material perfectly white, and yet perfectly free from glistening, the surface to be brought to a state of *absolute smoothness*. As polished silver would probably be quite as offensive as our present arrangement, it occurred to me that the surface might be covered with white enamel, after the manner of watch faces, though I am doubtful how far such a material would be susceptible of polish: but upon this point I would fain have the opinion of others. The amount of polish required and the difficulties in the way may be inferred from the following extract from Dr Miller's "Chemical Physics" (5th ed., p. 161): "Bodies in general do not possess surfaces actually flat. To common observation they may be flat; but, when optically examined, their surface is found to consist of an indefinate number of minute planes inclined to each other at all possible angles, and therefore receiving and reflecting light in all possible directions. When by the operation of polishing they are so much reduced as not to to be elevated or depressed more than about the millionth of an inch, they appear to become incapable of acting separately, and produce the effect of a uniform surface." Compare also "Nageli u. Schwendener," p. 86.

It will be seen from this that the degree of smoothness required to convert the surface I have spoken of into an efficient reflector is to the millionth of an inch. I have seen it stated that if put under the microscope, the surface of few microscope lenses would fail to show lines and scratches left by the polishing material. Perhaps some may be tempted to submit their objectives to this ordeal, and then to calculate how far the marks so found exceed the millionth of an inch, that is, how far the polishing of their glasses come short of perfection.

The difficulties, then, are considerable. On the other hand, popular report credits Mr. Whitworth with having constructed a machine to measure the millionth of an inch! If this be anything better than a stupid *canard*, and if to *measure* to the millioneth of an inch be really within the ability of our ordinary mechanics, surely to *polish* to that degree of exactness cannot be an insuperable to our London opticians, who are confessedly the very flower of artistic skill. At any rate I think the attempt ought to be made; and what has been done in the way of reflecting telescopes may serve as a guide. It is just possible that such reflecting surfaces might fail to furnish sufficient light for very high powers; but they would certainly be a comfortable and *trustworthy* aid to all powers under a 1-20th inch.

Speaking of opticians reminds me that, though I found most of the German opticians knew little more of Schacht, Harting, Frey and Dippel than their bare names, yet I always found them furnished with a well-thumbed copy of "Nageli u. Schwendener," and some of them were especially emphatic in their opinion of its merits, giving me to understand that, in their estimation, it was *the* book *par excellence*. I set it down at the time for just an ordinary German book on optics, copiously dotted with trigonometry and optical diagrams exhibiting a fair quantum of good sense,—and certainly of botany,—by two editors at once, one of them apparently supplying the good sense, and the other the botany. Perhaps there *is* a trifle too much of botany and crystallography, and what the editors call "Mikrochemie;" but this will be a venial fault with those of kindred tastes,—those, I mean, who believe with the poet,

"The proper study of mankind is "—fungi.

I have since endeavored to know it better.

It would be superfluous to call it profound; for all German scientific

works try to be that. It is that, and something more. It is a thoroughly *practical* treatise on applied optics, that is, on optics applied specially to the construction and correction of microscopical instruments,—a regular optician's *vade mecum*, with all the whys and wherefores reasoned out to the end,—in short, a veritable book after Mr. Wenham's own heart. Indeed, in many passages its language is almost identical with some of Mr. Wenham's recent utterances, so that the editors might seem rather to have been translating than composing, only that they happened to publish their remarks a few years earlier. And throughout the book there is an absence of that spirit, so general in German writers, of affecting to ignore all that has been written on the subject by other nations. They quote Scotch, French, English, American, and Dutch authorities with perfect impartiality, thus recognizing that science, like goodness, is the property of no particular nationality. In their chapter, " How to determine Angular Aperture," after discussing the various methods proposed, Mr. Wenham's among them, they remark, " This [Wenham's] method has indisputably the great advantage, that we are enabled by it to determine, not only the aperture of the objective in respect of whole amount of light it admits, but also the really available part of it, that is, the part which supplies sharp and correct images." See p. 168.

I may add, that the work is written by men of acknowledged eminence as mathematicians, who are at the same time notable microscopists, and of high repute for their microscopical researches in their own particular line; so that their statements will hardly be open to the sarcasms that might be levelled on microscopical assertions by writers on optics ignorant of microscopy, or at optical remarks by microscopists careless of optics.

I do not mean that all their theories will be acceptable to our London opticians. The following, for instance, will, I know, be very unpalatable: " The use of condensers is in most cases superfluous, where the mirror is sufficiently large, and can be brought up near enough. The use of such things has a meaning only where one purposes to enlarge the aperture of the incident cone of light." . . . "Condensers, therefore, are efficacious only in two directions; they give to the cone of light, which illuminates a particular area of the field of view, an equal intensity in its entire cross-section; and, in the next place, enlarge its angle of aperture. As for the other assertions regarding the effects of condensers, that they dissipate the interference lines at the margin of the object, and resolve difficult details proportionately better, the more completely the correction of their aberrations has been carried out, that is pure imagination." See pp. 91, 255. This, of course, is rank heresy; but I suspect that the editors, if assailed on this point, would be quite equal to the occasion.

But there is one passage (p. 169) so pertinent to the controversies of the day, that I must give it in the author's own words: "Es ist vollkommen gleichgultig, ob der Oeffnungswinkel eines Mikroskops beispielsweise 70 oder nur 68 Grad betrage. Es ist geradezu lacherlich, wie Harting mit Recht bemerkt, wenn man bei starkeren Objectiven, wie es manche gethan haben, die Grosse des Oeffnungswinkels bis auf Bruchtheile eines Grades angiebt. Und ebenso lacherlich und unpraktish ist es, Objective mit Oeffnungswinkeln bis zu 160° und daruber herzustellen, wenn hievon wenigsstens 40-50° auf einen total unbrauchbaren peripherischen Theil des Systems fallen, wie diess bei manchen Englischen Systemen wirklich vorkommt."

A translation of the entire work would be out of the question, owing to its great bulk,—628 pages large octavo. Of these about 358 belong to the microscope proper, while the rest of the book is devoted to an exposition of

their own peculiar views on gases, crystals, protoplasms, cell-formation, plant-life, and what not; all very learned and very interesting, but which would have gone much better into a separate volume, to be entitled, "The application of the Microscope to things in general."

Yours, faithfully, W. J. HICKIE.

Correspondence.

[Concluded from page 487]

Hotel Royal, Edinburgh, Scotland, Aug. 7, 1875.

At the conclusion of Professor Rutherford's lecture, Professor Burdon Sanderson, London, in moving a vote of thanks to the lecturer, said the subject of venesection, to which the latter had referred, was one which could not have been avoided, for it was a subject which at present moved the hearts of certain classes in this country, more particularly in England, to an extent which, he dared say, the Scotch people, less moved by emotional considerations, could hardly form a just conception of. If there were any present who felt with those now engaged in agitating this question,—and he had no doubt there were some present who felt a great deal for the poor animals, the last days of whose biographies were written in the tables before them,—he would draw attention particularly to the statement made by Professor Rutherford, namely, that in experiments used in illustrating the processes of physiology for the purposes of teaching, it was possible to demonstrate all the great facts to students in animals altogether free from suffering. They had the results of his research relating to questions in which they were all personally interested. The merit of such investigations no one was disposed to doubt, for it was by such investigations alone that they could obtain an answer to that question which, of all others, interested them most in physiology, or, in fact, in any application of science to medicine, the question, how did those agents, of which they had a vague knowledge, by means of their experience in medicine, affect the great functions of the body? After further remarks on the subject, which were very entertaining, the distinguished speaker took his seat amid great applause. The motion was seconded by Professor Struthers, of Aberdeen, which was cordially passed.

Sir R. Christison, in conveying the thanks of the meeting to the lecturer, remarked that, taking only one view of the subject, they were to have been deprived, if they were not actually deprived by prior investigations, of all their chalogogues, but Professor Rutherford had told them what was the cause of error, and had established that there were chalogogues, and no want of them. This was one of the fruits of venesection. He had understood there had been great shyness to broach this question at the present meeting of the Association, which he thought was a great mistake. It ought to have been made, in his opinion, a prominent question. It had been made a very prominent one with the public, who were completely in error in every respect regarding it, and therefore they should have taken advantage of this great meeting for showing where the truth lay, because the truth could be shown by those who, during their lives, had been engaged in venesections. He said the extensive experiments of Orfilla at once raised toxicology to the dignity of a science, and revealed the most important scientific truths. He would venture to say that there was not, in the whole

annals of experimental medicine, there was not in the whole annals of venesection, so extensive and protracted a series of cruel experiments as those performed by Orfilla. They knew the result, and would any one wish those experiments undone, and the remarkable discoveries made by Orfilla lost to the world? He thought there could be but one answer.

A great noise was made all over the world about Magendie's illustrious experiments, proving the absorption of poisons and other articles into the blood by means of the veins. They knew the important practical results which followed from that, and would any one wish those experiments undone? A great noise was made in the scientific world over Magendie's experiments on the nutrition of animals by substances which did not contain azote, upon which had been founded the accurate treatment of gout on the one hand, but more particularly of gravel on the other. Now, he should like to know if any gravelish person among the anti-venesectionists would desire that those experiments had not been carried out.

Coming now to his own part in venesection, he referred to his discoveries of the poisonous effects of oxalic acid. There were two sets of entirely different phenomena produced by this acid; the one corrosion and irritation, the other action on the brain and spinal cord; and it was found that while certain antidotes destroyed the corrosive action, they made no impression on the nervous system, which was the source of danger. Would any one desire that those experiments had not been made? He also referred to his experiments on animals with hydrocyanic acid and laburnum bark. He did not suppose any one would desire that such experiments were not performed, seeing that by means of them one could either establish the guilt of a criminal or save a man's life when unjustly charged. Then he came to the Calabar bean, which was brought under his notice by some very curious observations of African missionaries. He resolved to make experiments on it, and he made, in the first instance, a very cruel experiment, as he should suppose the anti-venesectionists would consider, he made an experiment upon himself. (A laugh.) Some of his friends thought he made a very narrow escape; at least one thing was certain, the effects were most violent. He made further experiments, and he found that the effects on animals were quite identical. Dr. Fraser, his assistant, continued the investigation, and was led to discover the very remarkable action of Calabar bean upon the pupil. Ought these experiments, he asked, never to have been performed?

In regard to Professor Rutherford's investigations, they saw what had been the result. The mere physiological facts were exceedingly interesting, but the practical results were most important. He did not see how the anti-venesectionists were to answer these statements, but he would be very glad to see the answer as soon as they were prepared to give it. After hearing Professor Rutherford's paper, and seeing his results demonstrated, hearing the remarks of Professor Burdon Sanderson, and the statements and experience of Sir R. Christison, no anti-venesectionist, with common reason, seemed to me, could help being convinced of the great necessity and utility, and, I may say, humanity of venesection in animals, to test the effects of medicine, and illustrate science to the medical student. The meeting then dispersed, and the work of the sections commenced.

The sectional meetings of to-day were unusually interesting.

In the physiological section there were several papers to be read, but the authors gave way for important demonstrations. Of these Dr. Braidwood gave a microscopic demonstration of the local manifestation of the vaccine contagion; Mrs. Hogan, M. D., showed her new process of staining tissues; and Professor Lister gave a demonstration of his method

of investigation into the nature of putrefaction and other fermentative changes. The Professor, in a series of experiments, showed how he had been led to the conclusion that putrefaction and fermentative changes were caused, not by chemical process, but by the introduction of living germs. His method was to procure a putrescible fluid, such as milk, and leave it exposed to the air, but at the same time rigidly exclude dust or septic material. The result of these precautions, he showed, was that specimens treated after this manner showed, after a long period of exposure, no effect other than that caused by evaporation, or, perhaps, the deposition of crystals. This result, he remarked, satisfied him that fermentative changes could not be due to the presence of any chemical elements in solution, but that they must be caused by living organisms in suspension in the fluid. He contended that if the chemical theory were correct, the forms of life evolved by putrefaction would have had but one uniform character, and would not exhibit that diversity which at present exists. Several samples of milk, preserved according to the method above stated, and which had been inoculated with quantities of ferment, had, he pointed out, developed many different kinds of *bacteria*, those which contained the smallest portion of ferment developing the least number,—a circumstance which he held to prove that only those varieties of *bacteria* were produced of which the germs had been introduced in the process of inoculation. This conclusion, he submitted, was corroborated by the fact that when *bacteria* were transplanted into different media, instead of being extinguished, were at once developed, at first slowly, but afterwards, on becoming accustomed to a particular medium, they underwent a change of form. At the same time they could be brought back to the original character by placing them under the same conditions as formerly.

A demonstration on the "Physiological Action of Light" was given by Professor Demar and Dr. J. G. McKendric, which was very instructive. By the aid of various appliances it was shown, in the first place, that light produced certain changes in the electrical condition of the retina. First, there was an increase in the electo-motive force on the impact of light; second, continued light produced a still further increase; and third, the removal of light was accompanied by a second rise of the force in question, bu that it afterwards fell to its original point. In a series of experiments, conducted in a darkened room, it was demonstrated that these phenomena held good in the eyes of animals. The concluding part of the demonstration was devoted to an explanation of the methods by which it was practicable to measure the amount of electro-motive effect.

In the Obstetric Section one great feature of the hour was the reading of a paper by Mrs. Garrett Anderson, M. D., on Dysmenorrhea, which was well written, and heartily received and applauded. From the contents of the paper, it was evident that the author knew as much about dysmenorrhea at least as some of the learned gentlemen that opposed her admission into the Association.

In the Section of Physiology, Dr. Lander Brunton, London, read a paper, communicated by Dr. Ferrier, containiug an "Abstract of experiments on the brains of monkeys, with special reference to the localization of sensory centres in the convolutions." The writer took occasion, first, to state a curious fact brought out by his experiments on the brain of monkeys. One would think, it was remarked, that when a large portion of skull was removed from the monkey's head, the animal would have at least a pretty severe head che, and would indicate this by holding its hands to its eyes, or in some other way. After the experiments had been performed, however, and bits of the skull removed, the animal did not

seem to be altered, the only difference noticed being that monkeys, previously ill-temper, were often greatly improved in disposition. With the aid of diagrams, indicating the points of the brain where the sensory centres had been determined, by the experiments, to exist, Dr. Brunton next described the *modus operandi*, followed by Dr. Ferrier. One of the most interesting experiments of all, he stated, was that connected with the operation of the brain corresponding to the sense of touch. This centre was situated well down in the brain, and the question naturally arose, how did Dr. Ferrier reach it in order to carry out his investigation? He first trephined a small hole in the skull, and then took a red-hot wire, and, introducing it through the hole, destroyed that part of the brain in which he believed one of the centres of touch to be situated,—there being two such centres, one for each side of the body. Immediately after this was done the monkey lost all sense of touch throughout its right arm and leg, this being exhibited in the most marked way. Again, in order to discover the sense of hearing, Dr. Farrier stimulated the part of the brain which he considered to correspond with this sense by means of electric currents, when he found that the animal pricked up his ears as if it heard something. He then, as in the other case, destroyed the part of the brain comprising the whole of this centre, and the animal became totally deaf. One curious fact had been ascertained in regard to the localization of the centre of sight. Dr. Ferrier, in destroying the part of the brain corresponding with the action of the right eye, found that the monkey, on having the left eye bandaged, was quite blind. This loss of sight, however, only lasted twenty-four hours, wheras, in the case of the entire centre of the sense being destroyed, it was found that the animal remained blind till death, so that it seemed as if one part of the organ could do duty for both eyes. An interesting discussion followed the reading of this paper.

The Association terminated with a grand garden party at 4 o'clock, P. M. On invitation of Principal Sir Alex. Grant, and the Senatus Academicus of the University, over three thousand ladies and gentlemen attended the party in the Royal Botanic Gardens. The party, indeed, proved a great success, the guests enjoying an agreeable promenade in the beautiful grounds, while entertained with a concert of excellent music. Sir Alexander Grant, in his official robes as Principal of the University; Lady Grant; Professor Balfour, also in his official robes as Regius Keeper of the gardens, and Mrs. Belfour, received the guests on their arrival, at the end of the entrance avenue, just in front of a fine specimen of the Wellingtonia Gigantia, planted as a memorial tree, in 1861, by Sir Robert Christison. By an admirable arrangement of Mr. McNab, the curators of the gardeners attached to the gardens, equipped with white wands, were employed to conduct visitors through the grounds, to point out the more notable plants, and indicate the views of greatest interest. Leaving the entrance avenue, the guests were conducted to the right, and shown over the museum of Economic Botany. Adjoining the museum is the class-room, and here a special exhibition had been prepared by Mr. Sadler. Its chief feature was a collection of 300 specimens of fungi, the majority of them British. Among the most curious fungi were "Satan's Own," one of the most poisonous of the mushrooms, and an immense "Polyporus," 18 inches long and 26 iches in girth. Very attractive, too, were the models of the microscopic fungi, which cause many of the diseases to which trees and plants are liable. In the same room was laid out a collection of plants of much interest to medical men. Here were specimens of the *insectivorous* plants, such as the *dioneas*,—a demonstration of whose carniverous character Dr. Burdon Sanderson gave on Thursday,—

and *droseræ*, or sun-dews; the latter have long spikes covered with hair, like glands, which give out a viscous secretion. This secretion performs the function of catching insects, the substance of which it absorbs. Among the medicinal or economic plants were the *quassia* from which the well-known bitters are extracted; coffee, tea, and the *eucalyptus globulus*, or blue gum, which of late has been the subject of much attention on account of its extraordinary qualities of removing malaria from the neighborhood in which it grows. Then there were the castor-oil plant, ths *gum tragacanth*; the jute, so largely imported from India to Dundee for sacking and other purposes; the *guaiac* plant; the *chinchona* plant, from which quinia is obtained; *drimys Winterii*, brought from Terre del Fuego, and very useful as a tonic; the cinnamon plant, from the Brazils; the oil palm from the west coast of Africa; the arrow-root plant from the West Indias; the bread fruit tree; the balsam of Peru, a very rare plant in this country; the date palm; the annato plant, used for dyeing confections, and giving pale butter a fresh, rich color; the lemon grass, which yields a fragrant oil; the olive tree; Barbadoes aloes; the camphor tree; the tobacco plant, and the cotton tree. Further on the visitor came across a curious Mexican cactus, which, in its native habitat, affords sustenance to the cochineal insect, used so extensively in dyeing; the black pepper and the cubeb pepper plants, from the Malay Archipelago; the cow tree, the juice of which is utilized as milk in Demerara; and, lastly, the ipecacuanha plant, of which it may be mentioned as a curious fact that the large plantations of ipecacuanha now in India were all derived from plants reared in these gardens, and sent out to Calcutta, Madrass, and Bombay Another table was furnished with models and sections of flowers, specimens of dry rot, and a very interesting landscape, formed naturally on a plank of wood by fungi. Microscopes were also placed at the command of the guests, and among the preparations were the cells of leaves of the *anacharis*, commonly called the American weed, which show in the most admirable manner the movements of the living protoplasm. Round the walls were hung beautifully colored drawings of such medicinal plants as squills, aconite, Calabar bean, belladona, henbane, capsicum, jalap, senna, nutmeg, tamarind, squirting cucumber, which sends out its secretion with immense force, assafetida, hemlock, sarsaparilla, rice, maize, millet, and the glorious Victora Regina.

Visitors were next conducted into the long range of glass houses. Here might be seen pitcher plants; the lattice plant, from Madagascar, with leaves like a window lattice; sensitive plants, whose leaves creep together on the slightest touch or even when breathed upon; a curious plant, with dark ruby, mottled, star-like flower, and an odor like that of carrion. In the next house were sugar-canes, bananas in fruit, tree ferns, and the papyrus, the bulrush of Scripture. A temperate house succeeded, with a fine collection of ferns and such plants as the ench ris, a lovely white lily from the Amazon, and the *Hæmanthu.*, from Calabar, with a pure white liliaceous flower, the lower part of whose stamen has remarkable wings. In the fifth house the visitor found another collection of plants interesting to the medical student, such as the *Theobroma cacao*, from which chocolate is made, the guttapercha tree; the Paragnayan tea plant, which is, oddly enough, a holly, and in no way allied to the true tea plant; the bread fruit tree; cassia; cinnamon, and pimento; the marmalade orange and citron trees; the tamarind; the tallow tree of China, the seeds of which contain a grease very like animal tallow; the ginger and gum-arabic trees; and the sacred banyan tree of India. Passing through several other houses containing collections of palms and ordinary green-house plants, the visitors reached the Australian house, with its dracœnas and epacrises; next the

heath house, where South African plants are displayed. Among the latter were seen specimens of the beautiful crimson orchid, *Disa grandiflora*, only found on the top of Table Mountain, at the Cape of Good Hope. The large tropical palm houses were next visited, and the collection here, which is the largest and best in the United Kingdoms, was much admired.

Leaving the houses, we then wended our way southwards to the arboretum, passing on the way the general collections of plants, arranged according to their natural orders, and from the high grounds of the main avenue, what are recognized as the finest views of Edinburgh, were duly enjoyed. Continuing in this direction the pinetum, with its fine collection of the newest and best conifere, was surveyed, when we passed to the rock garden, the first and most remarkable of its kind in Britain. Between the rock garden and the herbarium is a beautiful lawn, and here gradually all the guests congregated. In the center of the lawn was stationed the band of the Dragoon Guards, and the quaint Scotch bag-pipers, of the Queen's Edinburg Rifle Volunteers, which discoursed sweet music for the occasion. Refreshments were served in the winter garden, on the top of lawn terrace. The promenade on the smooth sward seemed to be generally enjoyed, and between five and six o'clock the terraces overlooking the lawn and the grass slopes presented a gay and animated appearance, the bright color of the ladies' dresses harmonizing well with the more sober attire of the gentlemen and the fresh greenery of the turf.

It was a fit and happy termination after the arduous labors of the Association, that the members could thus, with their families, enjoy the beauties of nature, works of art, cheered with good music, and be refreshed in both soul and body. May their last days on earth be as auspicious as this is the wish of one who enjoyed every hour of the Association to the fullest extent. Very respectfully, yours, A. J. M.

CINCINNATI HOSPITAL.

JONES STATION, O., Oct. 24, 1875

HON. M. B. HAGANS, *Member of the Board of Trustees of the Cincinnati Hospital:*

DEAR SIR:—Confiding in the sincerity of your statement to Dr. Thacker, declaring that you would endeavor to profit by fair and just criticism on the management of the Cincinnati Hospital, I did not call your attention to the subject in last month's NEWS. Seeing that you have utterly failed to redeem this promise I venture to address you again.

That you have not profited by such criticism is apparent Your course as a trustee of this hospital has been marked by acts of gross injustice, and I regret to say that it has not improved since the announcement of your promise. Your action, by which you selected for the present Medical Staff of the hospital three members from one college faculty, offering to select three from another, while you denied all representation from a third, was more than a blunder—it was a crime against one of the organic purposes of this institution. So indefensible was the offense perpetrated on the proscribed college by this action of your board, which you sanctioned and aided, that you have been compelled to remain silent under the most stinging criticisms from the daily papers and the medical journals of the city. Why do you pursue this course? Why do you not make an effort to redeem your promise? Do you not know that outside of the members of a sort of mutual admiration society composed of your board, your staff, and

the two medical cliques championed by the two "leading spirits" of your board, no audience can be assembled in Cincinnati that will applaud your course. If you do not know it permit me to inform you of the fact.

Now, my dear sir, why do you continue to occupy a position in which you dare not attempt to defend your record? Is not such a position humiliating and does it not tend to destroy that self-respect which every man ought to possess? You know that criticisms just and fair on the management of the hospital have often been made, and that petitions, modest in demand and respectful in language, have been laid before you asking for a redress of grievances, to all of which you have turned a deaf ear. Did you mean what your language implies, or was your promise made up of idle words? If you were not pledged in advance of your appointment to support the arbitrary and vindictive policy indicated by Drs. Dandridge and Judkins, why not make an effort to place the college faculties equal in the hospital staff? By so doing you will show to the world that you are not in a state of vassalage, that you are free to act, and that you propose to act in the future in the interests of justice and fair dealing; moreover it would remove the cloud which now hangs over your purity of intention on account of the support y u have given these schemes.

Here I must remind you that I am not without memory that you have been a judge in the Supreme Court of Cincinnati, nor do I forget that distinguished citizens, from your own account, have complimented you on your standing as a lawyer. The inference from this, your own statement, is, that you are no ordinary individual, but on the contrary one distinguished in a learned profession on account of your clever attainments. Now one so learned in the law as you would have the world to believe you are, must certainly have sufficient capacity to understand the meaning of a plain English sentence. I ask you, therefore, if when the law says the staff of the Cincinnati Hospital shall serve without compensation, does it mean that members of the staff have a right, by law, to go among college students and organize classes for private instruction in the wards of the hospital, charging fees for their services, and putting the same in their pockets? Again, when the law says that all fees collected from medical students for hospital instruction shall be paid into the city treasury, and expended in the purchase and support of a medical library, does it mean that the members of your staff, who rushed into notoriety through the partiality of your board, may pocket twenty dollars a month, or any other sum, from medical college students? I ask these questions because I am informed that one of these mercenary members of staff announced in the amphitheatre of the hospital a few days since, that the staff proposed to resume private class teaching in the wards of the hospital; that the law forbidding such teaching for the benefit of the teacher was technically defective and might be made inoperative by the courts; that legal gentlemen had given such an opinion, and that a portion of your board were willing for the staff to proceed with such instruction. If you gave members of your staff such an opinion, why did you do it? Would you resort to a trick, or advise others to do so, to defeat the plain meaning of the law? If you would, then, verily, the practice of the law as you practice it tends to destroy all moral honesty.

To be right in the future you must withhold the support you have given the "leading spirits" of your board. Read the correspondence when they were playing the role of conspirators against Dr. M. B. Wright, (see MEDICAL NEWS, vol. III, page 565.) From it you can get at their true inwardness and learn what their capacity was a long while ago for wrongdoing. While thus striving to disgrace Dr. Wright by driving him out of his chair in the Medical College of Ohio, see one of them acting as Quaker

preacher, and then again see him as a Presbyterian who, under the ministration of the virtuous Rev. Dr. Thompson, turned his back on the religion of his fathers; and then examine the part he has played in making the history of the Cincinnati Hospital, and you will learn that neither age nor the church has been able to instill into his nature a correct sense of justice. See him attempt to put his heel on an enterprise that dared to be borne without asking his permission, and for which he was not invited to stand as god-father. See him rave at his Honor, Mayor Johnston, because the latter told him the board was not procuring hospital supplies according to law. Hear him contend that sending word around town was fulfilling the law requiring public notice to be given Read their last report reorganizing the hospital staff—in short examine their erratic course for the last quarter of a century, and you will see how very unsafe it would be for the true man to take them as guides.

In conclusion, let me ask you to put your face against the proposed robbery of college classes by establishing a course of ward instruction for the benefit of such mercenary members of your staff as may desire to engage in the unlawful praetice; and also let me ask you to use your influence to procure a like representatior on the hospital staff from the faculties of all the regular colleges of the city. R. C. S. Reed.

Book Notices.

A Practical Treatise on Diseases of the Eye. By Robert Brudenell Carter, F. R. C. S Ophthalmic Surgeon to St. George's Hospital. With numerous illustrations. London: McMillan & Co. Cincinnati: R. Clarke & Co. 1875. 8 vo. pp. 591.

This book embodies the substance of the author's lectures at St. George's Hospital. It has been his aim to place before the profession, in a concise and readable form, a general view of the present state of knowledge with regard to the nature and treatment of the more important diseases of the eye.

We regard the work well suited to the general practitioner. The author has succeeded in making it a very readable work. The descriptions are plain and easily understood, and the treatment given is such as the knowledge of the present day approves.

While the work is quite complete it has not been thought necessary to dwell minutely upon maladies of rare occurrence, or upon details which are interesting only to specialists; nor has that kind of completeness been sought which is produced by undigested compilation. This will make it all the more acceptable to the general practitioner and student.

On Poisons in Relation to Medical Jurisprudence and Medicine. By Alfred Swain Taylor, M. D., F. R. S. Third American from the third and thoroughly revised London Edition. With 104 illustrations. Philadelphia: Henry C. Lea. Cincinnati: R. Clarke & Co. 8 vo., pp. 788.

This work is based on the two previous editions; but the complete revision, rendered necessary by time, has converted it into a new work.

The subject of poisons has assumed very great importance, and the study of them to a greater or less extent as a separate department has become absolutely necessary. Poisons now, in fact, form a science of themselves

collateral to both medicine and law, and both physician and lawyer, to be intelligent in their professions, must have studied them. There is far more about them that what is to be learned from text-books on chemistry and materia medica.

The very eminent standing of the author is a guarantee that the work is one of excellence. Dr. Taylor has written extensively upon medical jurisprudence, and no one is regarded as a higher authority in all that concerns the subject. The book upon our table has passed through editions both in England and this country, and this fact is very conclusive evidence of the high estimation in which it is held.

Our microscopic readers will find the work valuable and interesting to them in the descriptions and cuts of minute crystals which are quite numerous. These features alone we regard as well worth the price of the book.

A TREATISE ON HUMAN PHYSIOLOGY; designed for the use of Students and Practitioners of Medicine. By JOHN C. DALTON, M. D., Prof. of Physiology and Hygiene in the College of Physicians and Surgeons, &c. Sixth Edition, revised and enlarged, with 316 illustrations. Philadelphia: HENRY C. LEA. Cincinnati: R. CLARKE & Co. 1875. 8 vo. pp. 825.

With students and practitioners Dalton's Physiology has been one of the most popular text books. In all of the medical colleges throughout the U. S. it will probably be found in the hands of the majority of students. The fact that it has passed through six editions is an evidence of the high value at which it is held.

In the present edition of this book, while every part has received a careful revision, the original plan of arrangement has been changed only so far as was necessary for the introduction of new material. The additions and alterations in the text, requisite to present concisely the growth of positive physiological knowledge have resulted, in spite of the author's efforts at condensation, in an increase of fully 50 per cent. in the matter of the work. A change, however, in the typographical arrangement has accommodated these additions without undue enlargement in the bulk of the volume.

We can cordially recommend this work as one of the very best of its class extant.

LECTURES ON SYPHILIS, and on some forms of local disease, affecting, principally, the organs of generation. By HENRY LEE, Professor of Surgery at the Royal College of Surgeons of England; Surgeon to St. George's Hospital; Honorary Fellow of King's College, etc. Philadelphia: Henry C. Lea. Cincinnati: Robert Clarke & Co; 246 pp., 8 vo.

The Professor states his principal object to be to illustrate some of Hunter's doctrines, which the lapse of time and the dissemination of more recent views have obscured or caused to be forgotten. This object he has not only fully carried out, but likewise included the opinions, experiences, and experiments of a number of other eminent surgeons on the subject, reporting a large number of cases fully illustrating the subject

We would especially direct attention to Lecture III, treating on the inoculability of syphilitic blood in its various forms. After citing a number of cases, the Professor closes the lecture by summing up his own conclusions and comparing them with those of Hunter and Ricord, agreeing with those eminent men on some propositions and disagreeing on others.

The work is one which, in our opinion, will prove of the greatest interest alike to the surgeon and student. The publishers have evidently taken

pains to perform their part well, the letter press and engraving being all that can be desired.

A MANUAL OF MINOR SURGERY AND BANDAGING. By CHRISTOPHER HEATH, F. R. C. S., Surgeon to University College Hospital, and Holme, Professor of Clinical Surgery in University College, London: Honorary Fellow of King's College. Fifth edition. Philadelphia: Lindsay & Blackiston. Cincinnati: Robert Clarke & Co.; pp. 308.

A genuine multum in parvo, containing not only the fullest directions for the treatment and bandaging of all forms of minor surgery, illustrated by 86 diagrams, but in addition there is added to the work twelve pages of Formulæ; also diet tables of the principal London hospitals.

In a book of such exceptional excellence it is almost impossible to select any particular portion, but we might refer to that on the administration of chloroform as being especially interesting at this time, when opinions are so divided as to the advisability of its use, the directions given for its administration being such that if closely followed will most probably insure its safety. Taken as a whole, the work is one that we can cordially recommend as a marvel of cheapness and utility.

THE PHYSICIANS VISITING LIST FOR 1876. Philadelphia: Lindsay & Blakiston.

The Visiting List of Lindsay & Blakiston is well known to the profession, and is the most popular publication of the kind published in this country. We feel assured that to any physician making use of it it will save ten times its cost. It is not like a great many, filled with many pages of reading matter that increase its bulk without adding to its value and unfit it for carrying in the pocket, but all its pages being for charging of visits, memoranda etc., it is of very portable size.

Editorial.

TRIBUTE OF RESPECT.—The medical friends of Dr. Thomas Townsend, a former well known and popular physician of Wheeling, who died in 1851 and was buried at Mount Wood Cemetery, have procured from Berea, Cuyahoga county, Ohio, through the agency of Dr. Hupp, a slab of rock three by seven feet in size, out of which a monument to the dead physician's memory is to be made.

DEATH OF PROF. BENNETT.—This eminent physician died September 15th. The following extracts are from the obituary of an Edinburgh journal:

"Dr. Bennett was born in London in 1812. From an early age he would seem to have been destined for the medical profession; and with this view in 1829 articled as a pupil with the late Mr. W. Sedgewick, surgeon, Maidstone, the intention at the time being that he should follow the usual course of study for the London College for Surgeons and Apothecaries Company. The apprenticeship, however, was suddenly terminated, owing to some misunderstanding between the parties, and young Bennett thereupon resolved to prosecute his studies in Edinburgh. After graduating with the highest honors, while obtaining the gold medal for a surgical report, and receiving high commendation from Sir C. Bell for his thesis on a physiolo-

gical subject, Bennett, in 1837, proceeded to Paris, and for two years studied clinical medicine and the use of the microscope; also, perfecting that intimate knowledge of French language, for which he was distinguished, He founded the Parisian Medical Society, of which he was the first president. After visiting Heidelberg, Berlin and other Universities, he returned to Edinburg in 1842, and entered upon that brilliant career, which made him, at one time, the foremost man in his profession. In 1843 he received the appointment of pathologist to the Royal Infirmary of Edinburg, and five years after was nominated to the chair of the Institute of Medicine in the University.

"Dr. Bennett devoted himself to investigations which resulted in many valuable additions to the science of medicine. In 1845 he discovered the disease of the blood which he termed Leucocythæmia, on which he published an elaborate treatise. He wrote a treatise on poisoning by hemlock, to prove that it was the drug used at the execution of criminals in ancient Greece, with special reference to the description of the death of Socrates given by Plato. The most important of his numerous works is his "Clinical Medicine," which has run through many editions in this country and Europe, and been translated into numerous languages, including Russian and Hindostanee; another is his treatise on Pneumonia, in which he shows that since the practice of bleeding for inflammatory diseases had been discontinued the mortality from this class of disease had decreased in a remarkable manner. He contributed to the transactions of the British Association for '69 an essay on Murcury, the use of which in diseases of liver he had always strongly opposed.

"About ten years ago Dr. Bennett was seized with an affection of the throat, and obliged to obtain leave of absence from a winter session. Rest appeared to restore health for a time, but when, in August, 1871, he delivered an address at the ceremony o medical graduation, his friends could not help observing that he was suffering greatly. Struggling manfully against physical weakness, he began the work of session 1871—2, but after lecturing until the Christmas vacation he became so ill that he had to retreat to Menton.

"The summer of 1872 found the patient again at home; but in Novem ber he was compelled, after delivering only two lectures, once more to withdraw to the south. The following winter he was unable to resume professional duty, and at length, in July, 1874, he resigned the chair, having fairly made up his mind to quit Edinburgh and establish himself permanently at Nice. Having quitted his retreat in August last for the purpose of receiving the LL. D. from the Senatus of Edinburgh University, Dr. Bennett became seriously ill in the course of the journey, and on being examined in London was found to be suffering from stone. With characteristic fortitude he went to Edinburgh, where he renewed acquaintance with old friends during the recent sittings of the British Medical Association; and then, about four weeks ago, betook himself to Norwich for the purpose of undergoing lithotomy at the hands of Dr. Cadge. The operation was successfully performed on the 17th, and for three or four days the patient seemed to be going on well. It turned out, however, that the strain had been too much for his enfeebled frame, and after rapidly sinking for two or three days, he breathed his last, in the midst of his attached family, having only attained the age of sixty-three."

London Doctors.—Sir William Jenner commenced life as an apothecary in a small back street in London, and for a long time the battle of life fell hardly on him. He worked with rare energy, and after obtaining

the M. D. degree, and being elected a Fellow of the College of Physicians, was appointed Physician to University College Hospital, a post which he has held uninterruptedly ever since. His gentle suave manner soon endeared him to his students and pupils, and aided him in securing a high-class practice. At the present time he is physician to the Queen and to the Prince of Wales.

Another medical luminary commenced life under still more humble auspices. Sir William Gull, when a boy, was engaged to sweep out the surgery and dispensary of Guy's Hospital, an institution to which he is now the consulting physician. He has the largest fashionable practice of any man in Europe, a result due in a greater degree to his fine impressive presence than to any intrinsic worth he possesses. His warmest admirers cannot say that he ever performed any original work calculated to advance medical science. He has published a few papers on different subjects, the best of which is that on 'Abscess of the Brain,' now incorporated in Reynold's System of Medicine.

Sir Henry Thompson is said to have been originally a draper's shopman, after which he became for a short time a field preacher or ranter. His natural bias led him to attend a course of medical lectures, and he soon devoted himself heart and soul to the study of medicine and surgery. In 1851 he passed the examination of bachelor of medicine, at the University of London, and two years subsequently was elected a fellow of the College of Surgeons. He was for some years surgeon to the late King of the Belgians, on whom he performed lithotrity fifteen or sixteen times, receiving as a fee the sum of three thousand pounds. He has for a long time been the Professor of Surgery to University College Hospital, an appointment he has relinquished within the past few weeks. Apart from his capabilities as an operator, he is a most accomplished painter, and there is seldom an exhibition at the Royal Academy without a valuable contribution from his facile hand. It will be remembered that he was in constant attendance on the Emperor Napoleon III., and it is generally supposed that his fees in connection with the case amounted to quite a little fortune. He is an earnest and uncompromising teetotaller.—*American Weekly.*

THE WAR DEPARTMENT REPORT OF THE CHOLERA EPIDEMIC OF 1873.—We noticed this work in our last month's issue. The name of John M. Woodworth, M. D., Supervising Surgeon, U. S. [Merchant] Marine-Hospital service is upon the title page as author. It seems, however, that Dr. Ely McClellan, Assistant Surgeon U. S. A., did the work, except a very few pages, say about thirty, contributed by Dr. Woodworth.

THE CHOLERA IN SYRIA.—The Constantinople correspondent of the "British Medical Journal" writes as follows: "The latest advices received from Syria concerning the present outbreak of cholera are on the whole reassuring; though, I am sorry to say, that some cases with fatal results have occurred in the Lebanon. It seems on the decline in all the Syrian towns with the exception of Aleppo, where, during the week ending August 15th, there were 341 cases and 253 deaths. At Damascus, from the 9th to the 11th, there were only nine new cases. A large amount of intermittent fever, frequently of the form "perniciosa," prevails throughout the entire country, more especially along the shores of the Marmora and Black Sea, which may be accounted for by the fact of the continued wet; the presence of hot sun and heavy rainfalls invariably increasing the amount of malaria."

THE INDIANA MEDICAL COLLEGE, INDIANAPOLIS, IND.—If the following homœopathic connection does not destroy this College, it will surprise all who read this notice. Homœopathy has blighted the University of Michigan, and, like the East Indian Cobra, it will poison all it embraces.

"The Bobbs Free Dispensary, under the control of the Faculty of the Medical College of Indiana, is located in the College Building; it will continue to furnish a great number and variety of interesting ca es.

"Homœopathic physicians will attend all who desire their treatment. Cards furnished to such by the clerk."—*Med. Weekly.*

DAMIANA.—The "Philadelphia Reporter" having recently quoted an article in which the efficacy of a new Mexican plant named Damiana as an aphrodisiac and nerve tonic was loudly vaunted, states its instituted investigations as to its value, and reports thereon in its last issue. In three cases we administered two full bottles of the extract to men, from twenty-five to thirty-five, suffering from exhaustion of the generative powers, incident to excessive coition and self-abuse. From one of these we have not heard. The second reports, after steadily using it for three weeks, a loss of appetite, and "so little improvement in the strength of the organs that he can hardly tell if there is any." The third, an intelligent gentleman, writes in the same terms. The "Reporter" believes damiana to be useless, or nearly so.

BLOOD CORPUSCLES.—Dr. Bassy, of the University of Bologna, has published an elaborate memoir, in which he endeavors to show that the red corpuscles of the blood, or at any rate a large number of them, are transformed into white, exactly contrary to the generally received opinion. Those which do not suffer this change, he thinks, are, for the most part, converted into a granular detritus; others form spherical masses colorable by carmine, and are the cells of Gluge; while a number of others not colorable by carmine are ordinarily known as giant cells. In support of his opinion, he passes in review the whole field of pathology.

THE INCREASE OF VIABILITY.—Though medical science is often accused of small progress, there can be no kind of doubt but that within the last fifty years, at least, the average duration of human life has been considerably on the increase; for, according to a statistical report recently published, the mean average in France, which in 1817 was 31 years and 3 months, has attained the respectable standard of 39 years and 8 months for each individual inhabitant. Indeed, for the last five or six centuries the average duration of human life has been slowly but steadily increasing; and this may be attributed to a combination of circumstances: 1. The intelligent extension and application of the principles of the healing art, including vacci-ation; 2. The general extension of wealth and comfort; 3. A better understanding of hygiene; 4. The dissemination of schools.

LIPPENCOTT'S MAGAZINE.—This is one of our best literary magazines. It is purpose of the conductors to render it in the future, as in the past, a model of literary and mechanical excellence; and with this view no advantage will be neglected, which either talent or capital can command, to render each issue an agreeable and instructive compendium of popular reading.

Each number contains tales, short stories, narratives, descriptive sketches, papers on science and art, poems, etc , etc.

Yearly subscription, $4. Published by J. B. Lippincott & Co., Philadelphia.

THE

Cincinnati Medical News.

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Original Contributions.

TESTS FOR THE INSUFFICIENCY OF THE RECTI INTERNI MUSCLES.

By E. G. Loring, M. D., of New York. (1868.)

Since Graefe's last paper on muscular asthenopia, which was published in the *Archives* in 1862, very little has appeared in literature on insufficiency of the interni recti. The methods of examination, the tests for the determination of the degree and the modes of treatment, are essentially the same as those instituted, at this time, by the celebrated author.

These methods, as is well known, are four in number, and consist of the following experiments: first, the gradual approach toward the eye of a small object, which always remains in the median line and a little below the horizontal plane. The second, a modification of the first, consists in interrupting the act of binocular vision by interposing a screen between the object, as it is advanced, and one of the eyes. The third test consists in interrupting binocular single vision by means of pr.sms. The fourth, in the determination by means of prisms cf the adduction and abduction.

In these four tests, or even in the last two alone, we have to use Giaefe's own words, "a completely exhaustive method," not only for the diagnosis of insufficiency of the internal recti, but also for the exact measurement of its degree.

It is for the purpose of ascertaining whether this statement is correct that I propose to ask your attention to a brief consideration of the tests upon which the above assertion is founded.

The first test depends upon the fact that normal eyes, on the average, are enabled by the power resident in the interni recti muscles to make the visual axes intersect each other in the median line at three inches distance from the eye. Eyes which cannot do this are supposed to be deficient in converging power. The deficiency shows itself, as does all other muscular insufficiency, by a relaxation, either partial or complete, of the pre-existing tension. This must take place, in regard to the interni, as soon as the distance at which the object is situated demands a degree of convergence greater than that which the force of the iterni can acquire. The overtasked muscle then relaxes and the eye deviates outward. Graefe himself characterizes this as the coarsest and least to be depended upon of all the above mentioned tests. To a certain extent this is true, for there are undoubtedly many cases of insufficiency of which this test would not give the slightest indication. Still, when the deviation does occur at the usual

distance for near work, or even a little within it, this is one of the most reliable of all tests, affording as it does conclusive proof of muscular insufficiency, and offering, under ordinary circumstances, the surest indications for the preference of tenotomy over other methods of treatment.

There are several conditions which may affect the accuracy of this test, but as all these are incident to the second, which in itself is but a modification of the first, they will be, in order to avoid repetition, considered under that heading.

The second test, that of interposing a screen while the object is made to approach the eyes, is considered by Graefe as much more delicate and therefore more efficient than the preceding.

The principle on which it acts lies in the fact that as soon as the act of binocular vision is interrupted, the necessity for any undue muscular effort, by which binocular vision was obtained, is also removed, the eye then assuming that degree of convergence which can be obtained without undue effort, or, in other words, assuming a position where the equilibrium between the interni and externi is perfect.

In estimating the value of this test, two principal questions arise. First, does the fact that one of the eyes deviates behind the screen necessitate the conclusion that an abnormal amount of tension had previously existed for a given degree of convergence? Second, cannot such undue tension exist without such deviation?

I regard to the first question, no one who has been in the habit of accurately determining the refraction and the condition of the muscular apparatus of all cases of eye disease which present themselves, can have failed to notice that a deviation of one eye will often occur as soon as this is covered by a screen, while notwithstanding the patient is not only free from all asthenopic symptoms, but when also no insufficiency can be brought forth by the tests now in vogue. As corroborative of this, which I am aware is at variance with the recognized opinion, and for sake of brevity, I beg leave to refer to an example.

A young man of robust health presented himself at our office with a slight conjunctival affection in one eye. Being aware that such troubles are often due to faulty refraction or muscular insufficiency, an examination was made as to both these conditions. The refraction was found to be emmetropic, and the accommodation was good. As soon, however, as a screen was placed before one eye, while the object was gradually approached to 6″ or 8″, the eye which was covered immediately fell out to a considerable degree. So conspicuous was this that I at once imagined that insufficiency of the interni was the cause of the conjunctival trouble. On questioning the patient, who was at the time in college, occupying a high position in his class, I found that, though compelled to do a large amount of close work daily, he had never till the present time had the slightest trouble, nor did he now complain of any asthenopic symptoms whatever. On this account I was led to examine the conditions of the muscle more closely. The patient was able to converge with apparent ease and maintain the convergence up to three inches from the eye. The test with the prism and the vertical line with a dot was employed. The double images produced by the prism were in the same axial line, and remained so, even when the card was moved up to the patient's nearest point of binocular vision. A lighted candle with the colored glass was then substituted, and with the same result. The power of the muscles was then examined, and the adduction and abduction were found to be of normal proportions, and the equilibrium between the muscles, for all degrees of convergence, perfect.

After a short time the patient presented himself entirely relieved of the

conjunctival affection; the eye, however, still deviated behind the screen, yet no insufficiency could be called forth. Dr. Agnew then made an independent examination, remarking, without any suggestion on my part, the above mentioned peculiarity. Several months after I again saw the patient, and the conditions were exactly the same, though he had long been free from any trouble in his eyes.

I have seen many similar cases, but have only cited the above as an example.

Why some normal eyes, showing normal muscular force, will deviate behind a screen to a very perceptible or even considerable degree, I will leave to further consideration. Of the fact, however, I am fully convinced.

In regard to the second question, that insufficiency may exist and yet no deviation take place behind the screen, it will be sufficient to state that all authorities agree that it can. It was on account of this fact that Graefe proposed the two last methods of examination.

There are one or two conditions which would seem to have a tendency to prevent the deviation, which, I think, are worthy of more consideration than has been usually accorded to them, the most important of which conditions is the state of the accommodation.

The intimate connection between convergence and accommodation has long been known, and in my remarks yesterday, I endeavored to establish the principle that for every degree of increased tension on the ciliary muscle there was also increased tension on the interni. Now, if in a given case, the accommodation is so much reduced that it can only be adjusted for a near object by an undue effort, this undue muscular tension on the part of the ciliary muscle is then also shared in by the interni, and thus the visual axes are forced to maintain the required degree of convergence, and no deviation can occur so long as the object is seen distinctly. As the demand on the ciliary muscle is greater in hypermetropia and presbyopia than in other conditions, it is precisely here that this resistance to deviation would be most marked. As is well known, the proportion between the amount of muscular power held in reserve and that actually used by hypermetropic eyes decreases as the object approaches the eye, so that in the neighborhood of the binocular near point (itself generally removed unnaturally from the eye) the tension on the ciliary muscle is very near or even at its maximum. Now, under such conditions, if the interni are normally strong, the moment one eye is covered the tendency is for this eye to turn in, sometimes even to a considerable degree, showing that, at the same time that the ciliary muscle was making undue efforts, the interni were also. Now, allowing the same conditions to exist, except that the interni, instead of being normally strong, are to a certain degree insufficient in power, then the same increased tension will be demanded of the ciliary muscle and propagated to the interni in both cases, only what was sufficient, under normally strong interni to make the eye deviate inward, in the case of the weakened ones will be only sufficient to maintain the given degree of convergence; or it may be not enough for this, and the covered eye will then deviate to a trifling degree outward, but not enough to lead to the supposition of any abnormal insufficiency. Thus an insufficiency in muscular force in hypermetropic eyes may exist which may be capable of producing athenoptic symptoms, when the occupation is maintained for a certain time, which may, however, be entirely masked, for the moment of examination, even when the object is brought within the customary point for near work. At the present moment a remarkable example of this occur to me.

A patient with well marked asthenopic symptoms presented himself. Hm. was found to equal 1-18, V. = 1; A. somewhat limited. If a pen

cil was advanced in the median line, while one eye was covered with a screen, as soon the pencil had approached to 16″ (the patient's point of near work) the covered eye deviated behind the screen in a marked degree. If, however, the pencil was carried to 8″ instead of 16, no deviation took place. If it was moved still nearer, say four inches, the eye which in the first place had deviated outward, finally turned inward; so that, under the effect of increased accommodative efforts, what was, in the first place, latent divergent became latent convergent strabismus. These facts were corroborated in a subsequent examination by Dr. Agnew. The same phenomena occur in presbyopic patients, and I see no reason why they should not even in emmetropia, where the demands on the accommodation, from any cause, such as debility or paressis, were excessive

In hypermetropic patients it is, for this reason, better to neutralize the hypermetropia before attempting to determine the condition of the muscles, and to do this always at the point ordinarily chosen for near work; otherwise a large amount of insufficiency may remain concealed.

The effect of accommodative efforts is also not without importance upon the insufficiency of myopes. The difference between the degree of deviation when the myopia is neutralized by glasses, thus compelling some accommodative efforts for the near, and when it is not, is oftentimes very marked; and I cannot help thinking that the important service which suitable glasses may be made to give toward preventing that tendency to deviation which myopic eyes often show, has been much overlooked, or at least underrated—a tendency which has its origin, especially in young persons, as much in a desire to remove as much as possible the far point by an entire relaxation of the accommodation by means of decreased convergence, as in any inherent weakness of the interni muscles themselves. It is certainly as far from the natural order of things for myopes to use a maximum amount of convergence, with a minimum of accommodation, as it is for hypermetropes, to use a large amount of accommodation under small degrees of convergence.

Since, then, an eye may deviate behind the screen when no want of muscular power can be proved to exist, and, on the other hand, insufficiency may be shown to be present, and yet no deviation occur, it would seem to follow that this test is not sufficiently reliable to meet all the demands for a correct diagnosis; while, from the fact that it is extremely difficult to measure accurately with the eye trifling deviations, Graefe has proposed the two last tests mentioned above, which he has characterized as "infinitely better, and, in regard to diagnosis, entirely exhaustive."

The first of these tests is the well known one of double images, produced by interrupting binocular single seeing by means of prisms. The nature of the test and the manner in which it is employed are so familiar to all as to render an explanation of them superfluous on my part. The principle on which it acts depends on the alleged fact that so soon as the act of binocular single vision is interrupted, voluntary control over the muscles governing the visual act is lost, and the eyes are then at liberty to follow the natural muscular tendency, which they do by assuming a position at which the muscular equilibrium is perfect. If, then, in order to obtain and maintain a certain degree of convergence, a patient is using undue muscular efforts, it follows that such efforts must cease as soon as the power to make them is removed. The only question then is, does the test really remove and completely remove the ability to bring into action any excess of muscular force, over and above that which is represented by a perfect equilibrium between the externi and interni recti muscles, which al. agree ought to be considered the normal condition for all degrees of convergence? If the test fail

to do this completely, or even in part, it is manifest that the term "completely exhausted" cannot justly be applied to it. While admiring in the highest degree the great ingenuity and beauty of the test, as well as its efficiency as a rule, I cannot help believing that more exceptions as to its infallibility exist than we should be led to suppose from the representations of one whose views on ophthalmic science are now universally and justly looked upon almost as laws.

That the interruption of binocular single vision does not necessarily remove the control over the muscles governing the visual act, can be readily demonstrated.

If I place a prism over one eye in the manner suggested by Graefe, while the card, with a line having a dot in its centre, is placed before me in the median line, I then obtain the appearance of two dots on one line, the dots remaining in exactly the same position from any distance up to the nearest point of binocular vision This proves, according to Graefe's law, a perfect equilibrium between the external and internal recti. If the card is then held at twelve inches from the eye, the two dots still remaining on one line, I can, by voluntarily relaxing the tension on the interni, obtain crossed images at once, the two lines, each with a dot in the centre, being separated laterally to a considerable distance (as measured by prisms 35°). By exercising a slight voluntary effort, I can then make the secondary image (that proceeding from the deviating eye) gradually approach the primary (that of the fixing eye), till the two blend together, giving the appearance, with which we started, of two dots on one line. By a little further exercise of muscular force, I can make the secondary image pass to the other side of the primary, thus obtaining at will either crossed or homonymous images, or, in other words, a perfect equilibrium, an insufficiency, or a preponderance of muscular force in the interni, thus proving that the control over the muscles governing the visual act is not *necessarily* removed by interrupting the act of binocular single vision. If the control over the muscles remains in one case, notwithstanding the test for preventing it, why may it not in others? Why may not that voluntarily called forth excess of muscular contraction which enabled me to produce homonymous images, or increased convergence, be called forth by another in maintaining a right intersection of the visual axes, especially as this latter is a normal condition, produced and maintained by strong intuitive instigations, while the former is an abnormal condition produced in spite of such instigations? Why could not undue efforts at muscular contraction be put forth by weak interni as well as by strong, this effort being capable of just maintaining, in the one case, an exact equilibrium; in the other, of producing a preponderance of muscular tension?

But it may be alleged that this faculty has been acquired by practice, so that the tension on the interni can be varied at will, just as that of the ciliary muscle can be voluntarily increased or lessened In my own case it may be the result of practice, but I have seen patients endowed with the same power.

As an example of this, as well as an illustration of some other important points, I beg leave to call your attention to the following briefly stated case.

A middle aged gentleman visited us with the complaint that for several years he had suffered a great deal of pain in his head, accompanied with a gradually increasing disability to use his eyes. An examination revealed a large amount of insufficiency of the internal recti. The pain and inconvenience which he suffered were consequently referred to this cause, as his eyes seemed otherwise perfectly normal. Two things, however, militated

against this opinion: one was that the pain in his head had existed a long time previous to the affection of the eyes; the other was that, from boyhood, the patient had been able to "see double" at will, unaccompanied, however, by any inconvenience for near work; while at the same time, although the insufficiency called forth by the usual tests was very great (18° for the far, 32° for the near), still the degree of convergence which the patient could maintain was fully equal to the normal amount, the interni not yielding when the object was approached even to four inches.

As, after a careful examination, no other sympton of cerebral or spinal trouble could be detected than the pain above alluded to, the opinion was advanced that the cause of the patient's inability to use his eyes, as well as the great pain in the head, was to be referred to the weakened condition of the interni recti muscles. As there was, however, some doubt in regard to the matter, it was thought advisable that the patient's general health, which was somewhat reduced at the time, should be recruited before resort was had to an operation. A pair of strong prisms was, however, given to him for near work. After traveling for six months the patient returned, his general health being much improved, but the same trouble still existing in the eyes, though he said he had experienced some relief from the prisms. Another examination showed the condition of the interni to be about the same as had the previous ones. The externus of the left eye was now divided. Three days after the operation the insufficiency had sunk from 18° to 7° for 20 feet, from 32° to 10° for twelve inches. A week later the right externus was cut, and the subsequent examination showed that only 2° remained for 20 feet, while the patient could hold the two images in the same axial line from this distance up to his binocular near point.

The patient then made a visit to Philadelphia, and while there, at our instigation, saw Dr. Dyer. Dr. Dyer's eaxmination, made only one month after ours, revealed 15° of insufficiency for twenty feet, and 20° for twelve inches. Surprised at the discrepancy between Dr. Dyer's examination and my own, I then made another, and found that the patient could hold the two images in the same vertical axis from 20 feet to 4 inches; that he could not only hold them so indefinitely at 20 feet, but could even produce homonymous images equal to a prism of 10°; while, on the other hand, he could by a voluntary effort produce a divergence of the visual axes equal to a prism of 16°. This explained the difference between Dr. Dyer's examination and my own. At 12 inches the patient could produce at will either crossed or homonymous images. In other words, he seemed to have perfect control over the muscles governing the common act of vision, notwithstanding the fact that binocular single vision had been interrupted by means of a prism.

The first question which now arises is, can a person who can call forth homonymous images of considerable degree (under a prism angle up or down) at 12 inches, and whose adduction from that point amounts to nearly 40°, and whose abduction only to 24°—can such a person suffer from insufficiency, and are we justified in further operative interference, even if crossed images can be produced of 20° for the near, especially as an exhaustive examination revealed the fact that, notwithstanding an apparently normal amount of total abduction still remained, the power of the left externus had been considerably impaired? A morbidly candid person might ask still another question, and that is, was any operative interference at all necessary, notwithstanding the fact that 18° for the far and 32° for the near of insufficiency could be produced? The question is saved at least from being ridiculous by the fact that the condition of the eyes and head, after two operations, was but little if at all improved.

In estimating the value and correctness of Graefe's test the facts attending the determination of the degree of the insufficiency are of great importance, as they assist us in determining whether the control over the muscles governing the common visual act ceases when binocular single vision is interrupted. The amount of insufficiency is, as is well known, measured by that prism which, with its base inward, brings the two images, separated laterally, into the same vertical axial line. If the prism which does this amounts to 5, 10 or 15 degrees, we say that there is an insufficiency of 5°, 10° or 15°.

The question which now arises is, is it true that that prism which reduces crossed images to the same vertical line expresses the amount, and the whole amount, of the insufficiency? I think not, and my reasons for so thinking will be better understood and more briefly given by an example.

Suppose a person suffering from asthenopia to have crossed images which are reduced to vertical by a prism of 6°, base inward. With the help of such a prism we have restored the want of power previously existing, and have thus rendered the eye, apparently at least, equal to a normal eye, in which the equilibrium between the interni and externi is perfect. If now the equilibrium *is* perfect (and that it is so is claimed from the fact that the two images remain in the same axial line), then, if we add any more prisms with the base inward, we shall destroy the equilibrium, and the images which remained vertical under the first prism will then become homonymous as soon as the other prism is added, or, in other words, as soon as the insufficiency is over-corrected. This, it is true, is often the case, but it is by no means the rule; for we often find that, even after we have brought the images from being crossed into the same vertical line, we can go on adding prisms, sometimes those of a considerable degree, and yet the images remain exactly over each other, instead of becoming homonymous, as would be naturally inferred from the principles of the test. If the first prism, that which brought the images into the same axial line, corrected the insufficiency, why did not those which were subsequently added over-correct it? Suppose to the 6° which brought the images vertical we added successivel a prism of 2, 3, 4 degrees before the images left the same vertical axial line—that is, began to grow homonymous—the original prism amounted to 6°, the sum of those added to 9°; now is the insufficiency only 6°, or is it in reality 6°+9° or 15°; or, in other words, are we to consider the weakest prism which will produce, or the strongest one under which the images remain vertical, as the true measurement of the degree of insufficiency?

I have been in the habit of looking upon this gradual yielding of the interni under prisms as latent muscular force strongly analogous to that incident to the ciliary muscle in hypermetropia, and have hence applied the term of latent insufficiency to that degree of prism which can be added (without rendering the images homonymous) over and above the degree which renders crossed images vertical. I cannot see why that which takes place with the ciliary muscles should not also occur with the interni, nor understand why these latter might not, like the former, refuse to relax suddenly, of their own accord, a certain amount of tenston, to the exercise of which they have become accustomed. I have been led to this view from the frequency in which this so-called latent insufficiency occurs, and from the predominance which it assumes, in many cases, over what, in contradistinction, may be called the actual insufficiency. It varies in degree just as the actual does, and often amounts to double, sometimes to even three times the latter, and may even exist to a considerable degree where no actual can be brought forth.

Extended as these remarks are, I cannot forbear citing one or twe examples of tnis, which I consider an important physiological point. Two well marked cases of asthenopia presented themselves. A careful examination under atropine failed to reveal the slightest cause for it. When subjected to Graefe's test the two dots remained on one line up to the binocular near point. The same result followed with the candle and colored glass. This would prove, according to Graefe, a perfect equilibrium between the externi and interni muscles. If, however, in addition to the prism placed angle upward a second prism was added, with the base inward, the images still remained in the same vertical axial line, and did not become homonymous, as would be naturally supposed, till the angles of the prisms added in the one case amounted to 16°, in the other to the enormous amount of 24°.

It seems to me that such cases, of which the above are but examples, place us in a dilemma in regard to the accurate and easy diagnosis of insufficiency. In the above cases there either was, or was not, insufficiency. If there was, why did not the test show it? If there was no insufficiency, and the equilibrium of the muscles was perfect, how does it happen that a prism of 24° can be added wthout destroying this equilibrium? It can only happen in one way, and that is by the exercise of muscular tension by the patient proportionate to the degree of the prism added; but it is precisely this exercise which the test claims to prevent, and upon which its only virtue as a test depends.

I have called your attention to this matter of latent insufficiency because I have thought that its existence might explain some points of practical importance. Might not the reason why, after having corrected a certain amount of insufficiency by means of prisms, we find later that the amount of insufficiency has increased, depend upon the fact that the interni under the influence of the glasses have relaxed a certain amount of their tension, so that a certain degree of insufficiency which had previously been latent has become manifest, just as in the case of the ciliary muscle what had been latent becomes under glasses manifest hypermetropia? May not this also hold good in regard to tenotomy, and explain to a certain extent the difference in the effect which we gain by an operation?

As evidence of the existence of what I have, in the foregoing remarks, called latent insufficiency, I have only my own observation to offer, as I have never seen any allusion to the matter, though such may exist.

The fourth test, which is, in fact, but the complement of the preceding, consists in determining, by means of prisms, the amount of adduction and abduction, or, in other words, the amount of muscular force resident in the interni and externi recti muscles. This amount of adduction and abduction is measured by the strongest prism, which, with its angle respectively inward and outward, can be overcome without destroying binocular single vision. The absolute amount of this muscular force varies so much in normal eyes that little dependence can be placed upon it as a criterion of the actually existing muscular power; but when taken in connection with the other tests it offers valuable assistance in determining the necessity for, or at least the limits of, operative inference. All of which is, however, so clearly and fully laid down in the paper so frequently quoted in these remarks as to make further comment here superfluous.

There are, however, one or two conditions which influence the amount of muscular force as obtained by prisms, which might, if not properly taken into consideration, lead to erroneous results.

As is known, the proportion in emmetropic eyes between the adduction and abduction is, for average distances, as 3 is to 2. As, however, we approach the binocular near point the abduction rises, till it either

equals or surpasses the adduction. While in non-squinting hypermetropic eyes we often find that, in the immediate neighborhood of, or even at, the nearest point of binocular vision, there is no adductive force at all, while at the ordinary point for near work there is an absolute insufficiency of the externi which shows itself the minute the colored glass is placed over one eye, by homonymous images, and this, too, oftentimes without binocular single vision being interrupted by a prism with the angle upward or downward.

This fact led Giraud-Teulon to express the belief that there was the same inherent tendency in hypermetropic eyes toward weak externi that there was in myopic eyes toward weak interni. Be this as it may, there is no doubt about the fact that non-squinting hypermetropic eyes, as a rule, show a want of abductive force, the *original* cause of which I believe to be closely connected with the accommodation.

This want of abductive power may be either actual or apparent. If actual, it depends on some want of power in the muscles themselves, and may be occasioned in three principal ways.

(1) Through an abnormal preponderance of either volume or force of the interni over the externi recti muscles, which may in themselves be below the normal standard. This condition is generally inherited from parents who have themselves squinted, and in whom the interni have become, from constant exercise, unduly developed, while the externi, on the other hand, from want of use and from being constantly stretched, have lost both volume and vigor.

(2) From faulty insertion of the muscles.

(3) From a state of debility, either temporary or permanent, which has been developed by a constant straining on the part of the externi in order to maintain binocular vision while the eye is using accommodative efforts for the purpose of neutralizing the error of refraction. It is evident that in these cases, where there is inherent weakness in the externi, that the correction of the error in refraction, though it may give some relief, will not remove the whole cause of the trouble; and this is one of the reasons why some hypermetropes, even when provided with suitable glasses, still continue to suffer from asthenopia.

Instead, however, of being actual, this insufficiency of abductive force may be only *apparent.* When it is so it is due entirely to the efforts of the accommodation to overcome the error in refraction, and disappears as soon as this is corrected by glasses. This will be rendered clearer by an example. A patient has Hm. = 1-16; Ht., as estimated by the ophthalmoscope, between 1-12 and 1-10. If the condition of the muscles is examined at twelve inches from the eye without neutralizing the hypermetropia, the amount of adduction equals a prism of 20°, while the abduction amounts only to 4°. But if the error of refraction is corrected, then the amount of abduction rises from 4° to 15°, while the adduction, in this particular case, undergoes but little change. It is, as a rule, however decreased.

This shows that the disproportionately low force of abduction was due, in this and similar cases, not to any idiopathic weakness of the muscles themselves, but to the fact that the nervous influence, by which the ciliary muscle is able to overcome the error of refraction, is propagated to the interni, which thus throws the balance of power in their favor, and gives them, so long as accommodative efforts are going on, the preponderance of force. From which it follows that the tension on the interni can only be relaxed by relaxing that of the ciliary muscle. This, as a rule, the unaided eye refuses to do, for the reason that distinct vision would have to be given up. When, however, the hypermetropia is completely neutralized the undue tension on

the ciliary muscle is removed, and, as a consequence, that on the interni. The abnormal resistance which these latter offer to the action of the externi is thus removed, and these muscles are then left at liberty to bring forth their power in order to maintain binocular single vision, as soon as this is threatened by prisms being placed before the eyes with the angle outward.

It often happens that the effect of glasses in increasing, at least to its fullest degree, the abductive force in hypermetropic eyes, is not always obtained at once, even in cases where the externi are not idiopathically weak. It often takes some little time for the eyes to give up the exercise of a certain amount of tension, the employment of which habit has rendered intuitive.

The above is also applicable to presbyopia, or in fact to any other condition which necessitates undue accommodative efforts.

It will be seen that, in the above remarks, some doubt has been expressed, not so much as to the merits, as to the infallibility of the tests now in use, and I hope that it will be understood that even this has been done in no captious spirit, or for the purpose of underrating the benefits which patient perseverance as well as deep scientific knowledge have already bestowed upon us, but simply with the view of calling attention to a subject which, from the abuse of eyes now universally prevalent, is daily becoming, at least in this country, a matter of increasing importance.

Selections.

ERGOT AS AN ANTI-HEMORRHAGIC.

By F. Curtis Smith, of Middleport, O.

The oxytocic properties of ergot have been known as a domestic agent since the early part of the seventeenth century. In 1668 Camararius brought it before the profession, and Bautymanni in 1699. In 1774 its domestic use, and dangers from the same, became so general in France as to induce legislative enactment, prohibiting its employment by midwives. After this it fell into general disuse until 1807, when Dr. Stearnes, of Saratoga, N. Y., and in 1813, Dr. Prescott, of the same State, brought it prominently before the profession. The agent thus came into general use, and its oxytocic properties well known, and the proper conditions indicating its application well described by American writers and teachers, for a score of years before becoming generally adopted in England and Europe.

But while its power as a parturient was well known, it was left for later investigators to learn and prove its efficacy as an anti-hemorrhagic. Even in cases of uterine hemorrhage, I have been unable to find the least reference to its use until that of M. Goupil, (*Med. Chirug. Rev.* vol. x. No. 27, p. 251), in 1827, who related a case of recent labor, where profuse hemorrhage occurred after the placenta had been delivered. "Cold applications, and the introduction of the hand into the uterus failed to arrest the flow of the blood." He then gave ergot, which was followed in a few minutes by a severe and painful contraction of the uterus, causing the undue hemorrhage to cease. This must have been about the time of its introduction for uterine hemorrhage, as is indicated by further remarks in the same article above referred to.

From this date onward it came gradually into use for various forms of

uterine hemorrhage, and was mentioned by Churchill, Dewees, and other obstetricians that wrote during the fourth and fifth decade of the present century, as a valuable agent in controlling menorrhagia, metrorrhagia, and post partum hemorrhage. Since that time its use as a uterine anti-hemorrhagic have become too well known to require delineation here. Few, if any, doubt its power in controlling, to a great extent, all forms of uterine hemorrhage, where there is not some extraneous cause for its continuance, and where surgical means are necessarily resorted to for the purpose of effecting the desired end.

The earliest mention I have found of its application as an anti-hemorrhagic in other organs, is that by Durante De Caserta, in probably the latter part of 1835, (*Amer. Jour. Med. Sci.* for Feb., 1836, p. 500), in case of sanguine temperament, a child aged twelve years, where a copius hemoptysis, and epistaxis followed the use of an emetic given for the relief of an attack of colic. M. Durant "ordered a copious venesection and iced drinks, acidulated with mineral acids. * * These remedies were successful, but on the following day the hemorrhage was renewed with much greater severity, and returned at every attack of coughing, alternating with epistaxis." He then gave five grains of powdered ergot every two hours, with the effect of permanently stopping the hemorrhage.

Waring, in his work on therapeutics, refers to Mr. Ings, who used ergot as an anti-hemorrhagic in 1834, also to Pegnacea, Negri, and others, all of whom seem to have used it in atonic hemorrhage, hemoptysis, hematemesis, hemeturia, and epistaxis. But even Waring, in the latter part of the last decade, thinks the statements of these authorities need further confirmation.

From 1835 to 1870 there is found occasional reference in medical literature to its power in checking the flow of blood from internal organs other than the uterus. Since the latter date its standing in this respect seems to have become pretty fairly established.

In *The Practitioner* for December, 1871, Dr. Currie Ritchie, of Manchester, Eng., relates nine cases of hemoptysis in which ergot or ergotine was used hypodermically, in eight of which the discharge of blood was promptly checked, and with a fair degree of permanency. In the one where the discharge was again observed, it was the result of imprudence on the part of the patient. True, some of these cases were only under observation a fortnight, but the prompt action of the agent seemed unmistakable. One tolerably valid objection to the hypodermic use of ergot is its liability to produce painful induration or pustule. This, however, can count but little against it where prompt action is demanded at our hands.

Dr. Drasche, (*Wiener Med. Wochenschrift*), of Vienna, has also published a series of cases in which ergotine was used as an hemostatic. The greater number of his cases were those of hemoptysis from tubercular disease of the lungs, in which he found it to act promptly and well; but it was also resorted to in cases of hematemesis and epistaxis, with good results. He states that it is as efficacious as it is an easily employed remedy. "In some cases its effects were so rapid and so remarkable that no doubt could possibly be held respecting its action" He deems it our most reliable hemostatic, and as an "invaluable means when other agents have been tried without effect, or when sudden and profuse hemorrhage calls for instant action."

Among the valuable contributions on this subject is one recently from F. E. Anstie, (*Practitioner* for February, April and May, 1873). For nearly three years he has been comparing its effects as an "arrester of hemorrhage from the lungs in phthisis," with other agents more commonly in use as "gallic acid, acetate of lead, digitalis, turpentine and alum." In

some of his cases these agents were first administered with the usual degree of success, viz: that of temporarily checking the hemoptysis. But with the ergot administered per orum he usually obtained quick and permanent relief from the bleeding. In his hands as in that of others who had tried the agent, an occasional case was met with where the hemorrhage would return, but where it was more amenable to the use of ergot than to the other agents used. Anstie states his opinion as follows:

"I think we have now established the fact (a) of the direct action of ergot in the cases which I have recorded; (b) of its superiority in several of these cases to other styptics that had been tried; (c) the probability, from physiological analogies, that ergot would act more universally as a checker of hemoptysis than the routine remedies with which we are familiar; (d) also, that it is perfectly safe for the purpose in view, and in this respect is superior to digitalis, which it otherwise resembles a good deal."

My own experience with the agent as an arrester of hemorrhage, other than uterine, is quite limited, but very satisfactory as far as tried. In two cases of obstinate hæmaturia ergot permanently checked the discharge after plumbi acetas, tannin, per sulp. of iron, and opium had signally failed. No unpleasant symptoms resulted from its use. In a very obstinate and profuse case of hæmatemesis, occurring four years since in a lady in Clifton, I had used all the agents above named with only very temporary effect. Later in the case menorrhagia set in, for which I gave very large doses of powdered ergot (ʒ ss to ʒ i every two hours,) as the discharge was profuse, and my patient quite exsanguinated. The first dose was rejected, and with it several ounces of dark lumpy blood. Another dose was immediately administered which checked the free menorrhagia, and, to my surprise, the stomachic hemorrhage also; the agent was continued in smaller doses for several days, the hæmatemesis failing to return ever afterwards. The menorrhagia, however, returned at the next molimen.

In a recent case of hemorrhage from the bowels I prescribed the fluid extract of ergot with apparently the happiest effects in securing relief. As an internal hæmostatic I have found nothing to compare with a combination of ergot and Monsels salt. It has seldom failed for me, when thus combined, to arrest any bleeding that can be checked by the simple use of remedies by the stomach. In some cases, however, the iron will not be borne, while the ergot alone will be readily and easily retained. It will be asked how does this agent accomplish these effects. A question easier asked than answered satisfactorily. Anstie thinks it produces contraction of the smaller blood vessels, and also slows the heart, thus resembling digitalis, but that it is a much safer agent on account of its action being more steady and uniform.

To me its action seems compound, and as effecting its influence through both the organic and sympathetic systems of nerves. A dose of ergot given to a female will first affect the uterine tissue, especially if it be greatly enlarged from hypertrophy or gestation, or from any abnormal or foreign substances in its cavity. But it does not act till it has had time to enter the circulation and produce its power in this respect through stimulation of the nerves supplying that organ. Under other circumstances, its first effects seem to be in producing contractility of the tunics of the lesser arteries and veins. And this effect it doubtless brings about through its action on the vasomortor system of nerves In this case it is not stimulation of these nerves, but depression, as it has been well understood for many years that the capillary vessels, under its long-continued use, fail to continue conveying their blood onward, and a stasis results, causing gan-

grene in parts most distant from the heart. This effect can only be brought about by paralyzing the vasomortor nerves, thus drawing from the capillary vessels their wanted stimnlus needed to perform their function. Such paralizing effects, however, can only be had after its long-continued or excessive use, hence does not render it an unsafe remedy. Another effect of the agent is on the organic nerve centres, producing giddiness, a feeling of constriction in the head, dilation of the pupils, dryness of the throat and mouth, and a slight confusion of ideation, while at the same time the number of cardiac contractions are evidently reduced. These effects lead me to believe that its effects are not nearly as much upon the cerebrum as upon the medulla oblongata and spinal cord, from which the nerves, which it seems most to affect, receive their principal or entire origin.

Since writing the above, I call to mind a case of hemorrhage from the bowels, in a case of typhoid fever. The patient, a young lady, seemed hopelessly affected with this fever, was greatly exhausted, and unable to be raised up when the passages from the bowels occurred. When the hemorrhage occurred, I gave ergot as freely as could be administered, hoping to check the life-blood that was fast ebbing away. The effect of the remedy was prompt and decided in accomplishing this end. The patient finally recovered. In a case of profuse hemoptysis, which occurred a few weeks since, ergot was used freely in combination with Monsels salt It evidently had a strong hemostatic effect over the case, but a faithful trial with it did not completely arrest the hemorrhage, which seemed finally to be completed by plumbi acet. and pulv. opii in very free doses. This last is the only case of failure of its hemostatic properties, and here the agent was very beneficial in moderating the amount of blood discharged.

ON ECCHYMOSES AND OTHER EFFUSIONS OF BLOOD CAUSED BY A NERVOUS INFLUENCE.

By C. E. Brown Sequard, M. D.

Long ago I discovered that an injury to the dorsal part of the spinal cord is generally followed by considerable congestion and often by an effusion of blood in the supra-renal capsules. I found long ago, also, that the irritation of the nerves of a limb by burning may produce hemorrhages in the bowels and other abdominal organs. More recently I have seen and shown to the Academy of Medicine and the Biological Society of Paris, that ecchymoses rapidly appear under the skin of the external ear of guinea-pigs when the corpus restiformis has been injured. Subsequently I have discovered that a lesion of the pons varolii, in the neighborhood of the insertion of the crura cerebilli, produces ecchymoses, and sometimes rather large effusions of blood in the lungs—a true apoplexy.

I have lately studied much more fully the productions of hemorrhages in different organs by an injury to the nervous centres, and I will give now some of the results of my experiments, and state by what mechanism blood-vessels can be torn and allow an effusion of their contents.

I. I will say, first, that when the pons varolii or neighboring parts in the base of the brain are crushed or divided, or even pricked, if an effusion of blood takes place in the lungs or other organs, it is produced immediately. This excludes the possibility of mechanical causes, such as there are in cases of aphyxia from strangulation, compression of the chest, etc. It is well known, especially since the important researches of Prof. A. Tardieu, that

the lungs are usually found studded with small or large ecchymoses in such cases. It might be thought that some mechanical cause, more or less similar to that which exists in death by suffocation, exists also in my experiments. It might be supposed that the muscles of the chest contract spasmodically and press hard on the lungs, or that the larynx is e. nclusively closed up, while the inspiratory muscles contract, so that (as air is not able to enter the chest) blood is attracted with great force and distends and tears the delicate small vessels containing it. But such is not the mechanism of the pulmonary hemorrhage in my experiments. In the first place, I have seen blood effusions occur when the chest was opened, and when no external mechanical influence was exerted on the lungs; and, in the second place, in most instances of wound of the base of the brain, in my experiments, I found that breathing stopped at once after the injury.

II. It has been thought that the par vagum must be the channel through which the irritation starting from the brain goes to the lungs to produce a hemorrhage. It is known that we find frequently some ecchymoses in the lungs after an injury to that pair of nerves. I have made many experiments to clear up that point. I have ascertaind:

1. That if the chest of an animal is quickly opened after the division of one vagus or both vagi, and if care be taken not to press hard on the chest while opening it, the lungs are invariably found without any trace of hemorrhage or ecchymosis.

2. That if the lower end of the divided nervus vagus is powerfully irritated by galvanism, no trace of effused blood is found in the lungs when we open the chest carefully, immediately after a galvanization of about ten minutes.*

3. That galvanization of the medulla oblongata, when quite limited to that nervous centre at the level of origin of the par vagum, usually does not produce ecchymoses in the lungs.

4. That galvanization of the pons varolii and of the neighboring parts (the various cura) like mechanical irritation of those nervous centres, produces many small and large ecchymoses, and even sometimes considerable blood effusions in the lungs.

5. That if the par vagum is divided in the neck, irritation of the pons varolii, mechanically or galvanically, produces effusion of blood in the lungs just as much as when these nerves have not been cut, showing clearly that it is not through them that the influence exerted on the blood-vessels that are torn is transmitted from the brain to the lungs.

6. That after the transversal division of the spinal cord at any point above the sixth or seventh cervical pairs of nerves, if we irritate the pons varolii or the crura cerebelli, we find but rarely any effusion of blood in the lungs, showing that it is through the spinal cord that the influence, which when the cord is normal starts from the irritated brain, passes to reach the blood vessels of the lung.

7. That the nerve-fibres conveying the influence which in these experiments causes the hemorrhage, pass from the spinal cord into the first thoracic ganglia of the sympathetic nerve and thence go to the lungs, as we usually find no hemorrhage in the lungs after the extirpation of these ganglions when we crush the pons varolii.

8. That these nerve-fibres, which are excitable at their origin in the pons varolii and its neighborhood, usually cease to be so in their course towards the first thoracic ganglion, through the medulla oblongata, the spinal cord,

* This experiment has led me to the discovery that a galvanic irritation of the medulla oblongata, or of the par vagum in the neck, produces at once emphysema of the lungs.

and the roots of the spinal nerves which furnish fibres to the first thoracic ganglions. They, however, must be excitable sometimes, in some parts of their course, as I have seen galvanization or a section of the medulla oblongata, of the cervical spinal cord, or of the thoracic ganglions, produce, in certain cases, some effusion of blood in the lungs.

III. Not only the lungs, but also, though by far less frequently, the heart, the pericardium, the pleuræ, the supra-renal capsules, and the kidneys are found to contain ecchymoses after a great irritation of the base of the brain, especially the pons varolii. My friend, Prof. Charcot, with his usual power of discrimination, has already come to the conclusion that the hemorrhages in the cerebral meninges, in the endocardium, and in the mucous membrane of the stomach and the bowels, which he has found sometimes, in cases of disease of the brain in man, are due to a morbid nervous influence exerted on blood-vessels of those parts by the irritation of the brain. Such facts I have seen frequently in dogs, rabbits, and guinea-pigs. As regards the degree of frequency of an immediate production of ecchymoses, I will classify in the following order the different parts: first, stomach and bowels, once only (while on the contrary, as Schiff has shown for injuries to the optic thalami, and as I have found for injuries to the pons and its neighborhood, these organs are very often the seat of ecchymoses after a few days); second, the liver, only twice; third, the kidneys, eight or ten times out of hundreds of experiments; fourth, the endocardium, the pericardium, or the fleshy mass of the heart, in about one third of the experiments; fifth, the supra-renal capsules (immediately or soon after), in more than one third of the cases; sixth, the pleuræ, in more than one half of the cases; seventh, the lungs, in almost all the cases.

I have ascertained that lesions of the right side of the brain produce ecchymoses more frequently than those of the left side.

IV. I have already stated elsewhere (*Lancet*, *loco citato*) that there is no difference in the production of ecchymoses in the lungs, whether the lungs be distended, or, on the contrary, quite shrunk by the pumping out of the air they contained. This excludes the possibility of interference of contractions of the bronchiæ in the production of the ecchymoses.

V. We must admit that the tearing of blood-vessels which gives rise to an effusion in my experiments, is due to one of the following processes: first, a contraction occurring at the same time in veins and arteries, that of one of these sets of vessels, taking place gradually from a trunk towards its ramifications, pushing the blood as if it were injected towards the capilaries, which, not being able to get distended beyond a certain degree, burst and give rise to the effusion; second, a similar contraction taking place simultaneously in the veins and arteries, so that both vessels push blood towards the capilaries, tearing these minute vessels; third (which is much less probable), a contraction of veinules only, the blood still arriving from the heart accumulating in the capilaries and tearing them.

What is certain is: first, that the capilaries are the vessels which burst and allow the effusion of blood; second, that it is through an irritation of nerves of blood-vessels that the crushing, the section, or the galvanization of the pons varolii produces ecchymoses and larger hemorrhages in the lungs and elsewhere. I have often seen, in these experiments, some parts of the lungs with such a contracture of their blood-vessels that they were absolutely white from anæmia, *i. e.*, bloodless to such a degree that there was no blood at all in them.

VI. Two interesting conclusions flow out from these experiments: first, the vaso-mortor nerves of the lungs do not pass to those organs (as Schiff has maintained, and as I also admitted for a long time) with the fibres of

the par vagum, their place of passage, being through the cervical spinal cord and the first thoracic ganglion; second, the vaso-mortor nerves of the heart, the lungs, and the principal viscera of the abdominal cavity, arise not from the medulla oblongata, as is generally supposed, but higher up, from the pons varolii and parts above it or round it (especially the various crura).*

THE THERMOMETER AS AN AID TO DIAGNOSIS.

We have before us M. Labadie Lagrave's translation from the German into French of Professor Wunderlich's work on "Temperature in Disease," and as there is reason to believe that the use of the thermometer has not yet generally obtained with practitioners the importance due to it, we purpose translating passages from this exhastive treatise on the subject, written from an extensive experience embracing at least half a million exact thermometric observations. No better illustration of its efficacy in the detection of latent disease can be adduced than the narration of a case recorded by Dr. John Davy in his "Researches, Physiological and Anatomical." When Dr Davy was collecting his extensive observations on the normal temperature of the body, he was surprised to find that one person exhibited for many weeks a persistent temperature of 104 Fahrenheit, this person was a lunatic soldier, and Dr. Davy remembered that the insane do not seem to suffer from cold nor heat like ordinary individuals, and that there are certain organic lesions which are apt to occur in them, unaccompanied by the usual symptoms. For example, tubercle and cavities of the lung occur without cough or difficulty in breathing: and although no warning nor any indication may be given, the disease runs its course, terminating in death, as certainly and as rapidly as if indicated by the ordinary train of symptoms. Discovering then, as it were by accident, that the temperature in this lunatic was as high as 104.5° F. and that his pulse was rapid, Dr. Davy's attention was more particularly aroused; and although the man made no complaint, but had a good appetite, with his digestive functions so far as were known, acting well, yet disease of the lungs was thus discovered. The lunatic died in a month of acute tuberculosis, not otherwise expressed by symptoms beyond the great, persistent and continuous elevation of temperature thus incidentally noticed. There were ulcers of the larynx found after death, but there had been no affection of the voice; there were vomicæ and tubercles in the lungs, but there had been no cough; there were ulcerations of the intestines, but there had been no diarrhea; there was disease of the testes, vesiculæ seminales, and prostate, of a severe kind, but these lesions had been equally latent during life, except hardening and enlargement of the testicle without pain, all which conditions were only casually observed. In this instructive case, a temperature of six degrees Fahr. above the normal standard was the earliest indication of disease. M. Labadie Lagrave's translation is preceded by an introduction by Dr. Jaccoud, of the Laribosiere Hospital, from which we will make extracts.

"I assert with the indisputable conviction experience gives, that the place of the thermometer ranges alongside with the stethoscope and pleximeter. From the point of view of medical practice, clinical thermometry is the greatest progress which has been realized since the discovery of

* I have tried to show long ago that the vaso-motor nerves of the limbs arise from many parts of the nervous centres (including the ganglions), but chiefly from the pons varolii The conclusion above stated shows that visceral vaso-motor nerves, like those of limbs, chiefly come from the pons.

auscultation and percussion. These three methods address themselves to different pathological elements; two throw light on the local organic conditions, the third revealing the vital condition of the patient. Together they are perfect. Their union constitutes the arsenal of the clinical physician. You will remark that from one point of view the thermoscopic method is more precise, less open to error than its predecessors. The observation of physical phenomena revealed to the hand and ear, is subject to the oscillations of sensorial perceptivity; the observation of thermic figures includes no uncertainty, it is a simple reading. If then it is true that auscultation and percussion have inaugurated physical diagnosis, it is not less true that thermoscopic observation has created mathematical diagnosis. In the present day it would be difficult to realize, or rather one would realize, with alarm, what medicine would be, deprived of the assistance supplied by Laennec and Avenbrugger; but in a few years when the thermic method, established by its inestimable services, shall have triumphed over inertia and routine, it will be demanded with astonishment mingled with retrospective pity, what could have been the discernment of disease when it wanted the support of this indication, the infallibility of which is precious above all? Land at your will, either on the ground of science or on that of practice, and everywhere you will find the imprints of realized progress. Methodical observation by the thermometer has demonstrated the exhausting character of fever; it has fixed the character of different febrile cycles, and has furnished the proof of one of the fundamental truths of pathology, namely, the durability and immutability of morbid species; it has fixed the reality and the laws of crises, (quick or slow,) it has established on a solid base the Hippocratic doctrine, and modern science has been able to confirm, after thousands of years, laws formulated by the genius of the ancients—this method finally has revealed the existence of fever in maladies reputed apyrexic. The demonstration of the consumptive nature of fever of whatever character it may be, ought to introduce, and fortunately has introduced, a complete reform in the treatment of acute disease, and numerous patients already are indebted for their life to this therapeutic revolution. An inquiry into the connexions which exist between certain thermic figures, and certain symptomatic forms has revealed, that the generality if not the totality of febrile forms called ataxic, are the result of an excessive rise of temperature; this positive notion which has taken the place of hypothetical conception has indicated at the same time the only rational therapeusis. How shall we estimate the value of a method which, beyond all hypothesis, all interpretation, reveals day by day, hour by hour, the exact situation of the patient to the physician, and furnishes to his prognosis and treatment a certainty which has been the supreme but inaccessible end of practitioners from all time?

For myself, in the presence of the undeniable results of clinical thermometry, if anything could astonish me, it is the indifference and carelessness with which it is treated by the generality of our professional brethren. How can this be? We have here a method of exploring, of elementary simplicity; it furnishes for the interest of the patient, indications that would be vainly sought from any other method; it gives to medical appreciation a coin of vantage the solidity of which is such that the legitimate anxieties of a conscientious medical man are reduced to minimum, and this method is not universally adopted! It is incredible! Verily an abominable fact is the stifling grasp of routine. The book that you present to-day to French Physicians, is the code of clinical thermometry, established on millions of facts by an attentive observer in transposing it to our language in the elegant and facile form that is habitual to you; you have overcome the last

obstacles for familiarizing the method, and you will acquire a well earned title to the gratitude of all friends of progress."

Wanderlich in his preface to the second edition, 1870, informs his readers "that for sixteen years he had without cessation directed his attention to the variations of temperature in disease. In all the patients in my clinical wards thermometric mensurations were made regularly twice a day. In the cases of febrile affections, the temperature is taken four or eight times a day, and frequently oftener if circumstances require it. I have also acquired the conviction from frequent trials that this method of exploration is equally applicable to patients attended at their own houses. I have thus collected by degrees, millions of thermometric mensurations, and I have been able to follow the complete evolution of temperature in thousands of morbid cases." We propose from time to time continuing the translation of this valuable work.—*Ed. Canada Lancet.*

CLINIC ON DIAGNOSIS OF TUMORS OF THE BREAST.

By THOMAS BRYANT, F. R. C. S., Guy's Hospital, London, England.

GENTLEMEN :—Six months ago I removed from a woman thirty-three years of age a cancerous tumour connected with the breast, which I mistook for an adenocele, or simple chronic mammary glandular tumour; and I then made up my mind to keep the case before me, and to make it the text for one of my future clinical lectures. Indeed, my intention had gone a little further than this, for I had designed to devote every clinical season one or more lectures to the consideration of my mistakes during the past year.

It is true that to dwell upon past errors is not so pleasant as to talk about our successes, but it is far more profitable; and as I may honestly admit that it has been from the errors I have committed and seen committed that some of my most useful lessons have been learnt, I would fain hope that the consideration of my mistakes will form no exception to this experience, and that good will come of it to you as well as to myself.

The mistake you saw me commit on Tuesday last (January 26) has led me, at once, to adopt the practice I had arranged to follow. I propose, therefore, to-day to consider with you the different points of the two cases in which I have fallen into error, at the same time drawing such useful lessons from their consideration as may present themselves.

You all remember the case on which I operated last week. The patient was a woman forty-seven years of age, married, but had had no children. An aunt on her mother's side died of cancer of the breast. Her health was good up to six months ago, when she observed a tumour of the right breast, about the size of a pigeon's egg. It caused very little inconvenience until about two months ago, when the breast became painful, and she consulted a surgeon, who prescribed an embrocation, which produced a rash, but failed to give relief. He therefore recommended her to consult a hospital surgeon. On admission we found a hard roundish tumour of the right breast, about the size of a small tennis-ball, freely moveable over the pectoral muscle. The skin over the tumour was not adherent, the nipple was not retracted, neither were the axillary glands affected. The tumour could not be separated from the gland. When the tumour was moved the whole breast moved with it, indicating that the growth was in the substance of the gland-tissue. It thus appeared to be a chronic cancerous infiltration

of the gland in an early stage. I therefore advised immediate removal of the breast, for all experience points to the wisdom of removing the entire breast as soon as it is discovered to be the seat of carcinoma. Accordingly, I excised the breast yesterday week, and was surprised to find that the tumour was a simple cyst.

Now, you may ask—Why did you not ascertain by puncturing whether the tumour was cystic or not before operating? My reply is that the age of the patient, the history, and the characters of the tumour pointed strongly to cancer. It clearly was not inflammatory; it had none of the characters of adenoma, and there was nothing about the growth to raise a suspicion of its being a cyst. If you ask me why I did not suspect that it might be a cyst, I would ask you to look at the preparation, and you will observe that the tumour has fully three-quarters of an inch of gland structure in front of it, so that it felt irregular, hard, and resistant, not smooth, round, and fluctuating, as cysts usually are. I am sorry that the possibility of its being a cyst did not cross my mind, for then a puncture would have corrected the diagnosis, and a less severe operation would have been performed.

Ought we, therefore, in all cases of tumour of the breast to make an exploratory puncture before operating? To this I must answer, decidedly not; for the practice of employing in all cases what may be called for in exceptional instances alone cannot be recommended. I must advise you, however, and very strongly, to puncture all doubtful tumours; for the surgeon is bound to employ every means at his command to arrive at a correct diagnosis. On the other hand, given a tumour with all the evidences of carcinoma,—fixedness to the muscles beneath the gland, adherency of skin, retraction of nipple, and enlargement of the neighbouring lymphatic glands—a puncture is wholly unnecessary. The same remarks apply to cases of adenoid tumours of the breast, in which their distinguishing features are so marked as to leave no room for doubt. If we exclude these two classes, there is an intermediate class of breast tumours which cannot be diagnosed with certainty unless a puncture be made. Looking at the case on which I operated on January 26, by the light of the knowledge gained after the event, I might say that this was one of the intermediate class of cases in which puncture would have been advisable, and in similar cases I shall in future do so before proceeding to operate. Although in this case we have removed the entire gland, we have done no great harm; it had long ceased to be active, and would never be required for its natural function, while at any time it might have become the seat of carcinoma. Our respected consulting surgeon, Mr. Cock, tells me that his experience of the clinical history of such cases enables him to give the opinion that, sooner or later, if allowed to remain, carcinoma will develop around the cyst-wall. You saw an illustration of this in that beautiful case on which Mr. Birkett operated in our theatre yesterday. In this case there was not the slightest suspicion of cancer, and Mr. Birkett hoped to save the breast by dissecting out the cyst-wall. On reaching the posterior wall of the cyst, he found it to consist of a mass of carcinoma, which had also infiltrated the pectoral muscles, necessitating the removal of the entire gland.

I will now return to the other case of mistaken diagnosis to which I referred at the commencement of this lecture. The patient, a married woman, thirty-three years of age, was admitted to this hospital under my care on June 13, 1874, with a tumour about the size of a hen's egg, situated at the sternal margin of the mammary gland. She was a healthy-looking woman, and the mother of three children. The youngest was two years of age, and had been weaned only six months. The tumour began as a small

lump six months before admission, and had been steadily increasing in size. It was of rounded outline, lobulated, freely movable over the subjacent tissues; as far as could be made out, it was unconnected with the substance of the gland, the skin and subcutaneous tissue were not implicated, the lymphatic glands were not affected, and it was free from pain. Here there were all the typical signs of adenoma occurring in a woman whose breasts had been in an active condition up to the appearance of the tumour; and I, as well as those of my colleagues who examined the case, concluded that that was the nature of the growth. While removing the tumour I suspected my diagnosis, and accordingly cut into it, hoping to see it encapsuled, and that it would readily turn out. I found, however, that it was undoubted carcinoma, and that it was connected by means of a neck with the substance of the gland itself: it was, in fact, cancer of an outlying lobe of the gland, and I was therefore obliged to remove the whole of the breast. Here, although the diagnosis was wrong, the practice was right. Had we formed a correct diagnosis at first, it would not, as in the other case, have prevented our removing the entire breast. The only error on my part was in pronouncing such a definite opinion as I did before operating.

And here let me remark that although we are here as teachers, we do not profess to be infallible. When a case is presented to us we can only weigh the evidence derived from the facts before us, and state our opinion accordingly. It is not for us to hesitate or refuse to pronounce an opinion because the case happens to be a difficult or somewhat obscure one; and I would caution you, as youug surgeons, not to be too mistrustful of your power of diagnosis, especially in breast cases. It is not enough to say that a tumour is a tumour. The clinical characters of the various classes of tumours are well known, and it is for you to weigh well all the facts derived from examination, the clinical history and the general condition of the patient, then give your opinion as to the particular class among which the case under examination should be placed. Exceptional cases will now and then arise when you may be mistaken in your diagnosis, but you may derive some consolation from the reflection that the best among us make mistakes occasionally.

We will now for a few moments glance at some of the leading points in connexion with diseases of the breast, confining my remarks chiefly to those characteristics which aid us in arriving at a diagnosis. Excluding acute and inflammatory diseases, tumours of the breast may be divided into three classes:—

1. Cancers;
2. Adenomas;
3. Cysts (simple or complicated).

The fir-t and second are of common occurrence; the third is an intermediate class, and are comparatively rare.

Cancer of the breast is a disease of adult life, and usually occurs at the age of forty and upwards. In looking over the notes of some 500 cases which have come under my notice, I was struck with the fact that cancer attacks unmarried women earlier in life than it does married women. The cause probably is that in the unmarried the breast ceases to be active at an earlier age than in the married. The period at which the breasts are most prone to the attack of cancer is that of functional decline.

Cancer attacks the breast in two forms—as a general infiltration and in the tuberous form. In the infiltrating variety the elements are thrown out around and between the ducts, separating the ducts from each other, and putting them as it were on the stretch. If the infiltration is at no great distance from the nipple, this tension of the ducts draws the nipple down,

causing what is called retraction. The cancer-cells go on multiplying, and as the disease progresses the cancer disseminates its elements into all the tissues with which it comes in contact. In this particular it differs from all other morbid processes. In other growths the natural issues are not invaded—they are simply pushed on one side. If the tumour is very large, the skin may be stretched to the point of ulceration, yet it remains freely movable over the tumour, and so far healthy that if the tumour be enucleated the parts become restored to their normal condition. But it is otherwise in cancer. As the cancer elements increase they spread to the subcutaneous tissue, and finally the skin itself becomes infiltrated, and is no longer movable over the tumour. If the tumour be not removed, the skin after a time loses its vitality and ulcerates. So with the tissues beneath the gland; each in turn becomes infiltrated with the elements of cancer—cellular tissue, muscles, and bone. When this occurs there is a fixedness about the tumour; the breast can no longer be moved over the pectoral muscle. In these cases it is often doubtful whether a surgeon is justified in operating or not. But no case should be allowed to advance to this stage; the rule of surgery is to excise as soon as the diagnosis is made out. You often hear reference made to the axillary glands being affected in cancer. One of the characteristics of cancer is its tendency to spread to distant parts. How the elements spread is not in all cases clearly made out; but in the case of the lymphatic glands it is well ascertained that the cancer-cells are taken up by the lymphatic vessels, and are thus conveyed to the glands. In the same way cancer-cells may be propagated by means of the systematic circulation—a contingency which should make us always very guarded in our prognosis.

The tuberous form of cancer differs from the infiltrating in that it is more circumscribed, It has, however, the same clinical course, and will lead to the same results—infiltration of skin, muscles, etc.

Adenoma generally occurs in the breasts of young healthy women during their period of developmental perfection. Among married women it often occurs in those who are suckling. It usually grows slowly, and as it enlarges it pushes the breast aside; it never infiltrates it. It may grow to a great size, and stretch the skin even to the point of rupture; but the skin is never infiltrated, nor the tissues beneath. The tumour is encapsuled, and usually movable, and can be readily turned out. It is never associated with any secondary glandular enlargement. Although the breast is the most common seat of adenoma, the disease may appear in other parts.

I had intended to say a few words on cyst disease; but as I have already trespassed beyond the time usually allowed for these lectures I must reserve this part of the subject for another occasion. I only hope that what I have said, and the experience gained from these two cases, may be the means of preventing you making similar mistakes under like circumstances.—*Medical Times and Gazette.*

PROF. TYNDALL ON TYPHOID FEVER.

There is, we apprehend, some confusion in the public mind as to the meaning and objects of Professor Tyndall's recent publication on typhoid fever. No doubt has, for many years, existed as to the communicability of typhoid fever by excremental pollution. The vehicle of contagion, and the means of sanitary prevention have long since been established by Jenner, Murchison, Budd, Farr, and Simon, not to speak of the other workers, whose name is legion.

Dr. Tyndall, however, who, as President of the British Association, must be acknowledged as a leader in natural science, yet professedly, as an outsider, and with no knowledge of medical science, undertakes to settle on behalf of the public, once and for ever, the important question whether typhoid fever can ever have a spontaneous origin from fæcal fermentation, or whether the disease must, of necessity, always spring from a specific germ derived from a pre-existing case of fever. It is not a little remarkable that a philosopher who maintains that even the human race has, by a process of evolution, in the course of countless ages, sprung from something lower in the scale of organization, even than organisms, which he compares to "drops of oil suspended in a mixture of alcohol and water," and who seems to agree with Lucretius in affirming that "nature is seen to do all things spontaneously of herself, without the meddling of the gods," should yet maintain that the poison of typhoid fever can never arise except from a previous case of typhoid fever, and must therefore have existed from all eternity, before even man himself existed. Dr. Tyndall submits that the question at issue involves no knowledge of medical practice, but simply a capacity to weigh evidence. It seems scarcely credible, however, that Professor Tyndall can have carefully weighed the evidence on both sides, when he comes forward and asserts positively in the public press, that typhoid fever is a most contagious disease, like small-pox, and can arise in no other way than by contagion. It may be hereafter shown that such is the case; but the statement is far from having been proved, and there are certainly strong facts on the other side, which demand that judgment in the matter shall be deferred, and which have an important bearing upon medical practice. If the excretions of typhoid fever be so eminently contagious as Dr. Tyndall asserts, it is difficult to account for the remarkable exemption from the disease of the attendants on the sick referred to by all medical writers.

Secondly, there is the experience of the London Fever Hospital, referred to by Dr. Murchison in the second edition of his work on the *Continued Fevers of Great Britain*. "During nine years, 3,355 cases of enteric fever were treated in the same wards with 5,144 patients not suffering from any specific fever. Not one of the latter contracted enteric fever, although it was not an uncommon practice for them to sit over the evacuations of enteric patients, and the use of disinfectants was quite exceptional." Private practice, again, yields like results. Dr. Murchison states that, at the date of the publicatiou of his work, it had been his lot to be consulted in upwards of fifty instances in which persons had contracted typhoid fever away from home and had been brought home ill with it. In only two of the instances did fresh cases of fever appear in the house into which it had been imported, and in neither was there crucial proof that the disease was communicated by the important case. His experience on this point has been confirmed by that of other observers; and we believe that most physicians having a large consulting practice in fever, when asked as to the propriety of sending away the inmates of an infected house who are not themselves suffering from the fever are chiefly influenced in their reply, by the circumstance of the disease having been imported or indigenous, separation being considered advisable in the latter case, but not in the former. Two years ago, typhoid fever appeared in a nunnery in the suburbs of London. Sixteen of the patients were removed during their illness to their homes, but in not one of the sixteen houses did the fever spread.

Lastly, if a drain gives typhoid fever merely as Professor Tyndall contends, because it is "a direct continuation of a diseased intestine," it is remarkable that some of the most notable outbreaks of typhoid fever in connection with bad drainage have arisen from the drain being blocked up, and

from the communication with diseased intestines being in this way cut off. Many other arguments might be adduced; but enough has been said, we think, to show that Professor Tyndall has only studied one side of the question, or, at all events, has presented to the public, assertions which are calculated to create unnecessary alarm as to the contagious character of typhoid fever.

And this leads us to a most important practical question; viz., the mode of the prevention of typhoid fever. It is to be observed that, when typhoid fever is stamped out by flooding of drains and the employment of disinfectants, there is no proof that the disease is due to germs derived from a diseased intestine. The success of the measures referred to is as much in favour of the so-called pythogenic theory as of that which is opposed to it. In prophylaxis, in fact, we go farther than even Dr. Budd and Professor Tyndall. We would not be satisfied with destroying the excreta of the sick, but we would insist on the necessity of preventing the pollution of our drinking-water or of the atmosphere of our dwellings with sewage of all sorts.

Lastly, we are not a little surprised that a man of Dr. Tyndall's scientific position, an adept in weighing evidence, should exhibit such a want of philosphic caution as to crown his argument by the astounding announcement that "Dr. Klein has recently discovered the very organism which lies at the root of all the mischief and to the destruction of which medical and sanitary skill will henceforth be directed." Dr. Klein's researches are still in embryo, and he himself would be the last to make any such statement.—*Brit. Med. Journal.*

Clinics Cincinnati College of Medicine and Surgery

CLINICAL LECTURE.

By A. J. Miles, M. D., Professor of Diseases of Women and Children in the Cincinnati College of Medicine and Surgery.

Reported by T. M. Wittkamp, A. M., M. D., Dispensary Physician.

Gentlemen of the Class.—I have to present for your consideration at the Clinic to-day two typical cases of deranged menstruation; indeed, they are antipodes; one suffering from amenorrhea, or absence of menstruation; and the other menorrhagia, or excessive menstruation. The dispensary physician will now please read the history of the cases:

Case I.

"November 20. Mrs. G., age 33; married; house-wife; born in Germany; knows very little about her family history. Her mother died when she was very young; her father, she thinks, is still alive, enjoying fair health. She has been a sick woman for some time, had a cough for a long time, but never paid any attention to it, until this spring. At this time she likewise had a swelling over the middle of her sternum; it was rather tender to the touch and very painful; painted the tumor with tinct. of iodine, and it disappeared. We lost sight of the patient until three weeks ago, when she presented herself at the College Dispensary with the following history: Coughs considerable; expectorates a white tenacious mucus; shifting pains in her breast, shoulders, over sacrum and in both iliac regions; shortness of breath especially on great exertions; feels languid and drowsy; has vertigo and dimness of vision; menses arrested for five months; slight

leucorrhea. The general appearance is somewhat anæmic; face pale, cheeks sometimes slightly flushed; tongue and lips of a pale red hue; pulse 80 and weak; appetite poor; sour eructations from the stomach; bowels costive. Physical examination reveals some slight impairment of resonance over the anterior of the chest, more so over the upper part of the left lung; respiratory murmur is rather feeble, undoubtedly incipient phthisis. On digital examination find cervix uteri about one inch from the outlet of the vagina, very tough to the touch. Some slight pain on introducing the speculum; cervix very large and indurated; bleeds very easy; is covered with granular ulcerations."

CASE II.

"Miss E., aged 20; city; domestic. Parents are alive, and, according to her statement, enjoying good health; no tubercular history in the family. She states that for some time she has been spitting blood, and has a slight cough.

"*Present Condition.*—A young woman, average height, fair complexion; somewhat emaciated; poor appetite, bowels costive, tongue coated with a slight white fur. Has a pain in the right side of her breast and on both sides of the neck over the tonsils; a slight cough; has likewise a pain in her back; some slight leucorrhea at times; menses are very profuse, and continue for ten days, so that she is prostrated. On examining her throat tonsils are swollen, red and covered with ulcers that have a grayish covering. Physical examination of the chest reveals nothing abnormal. On vaginal examination the uterus was found prolapsed and engorged, and the os and cervix extensively ulcerated."

Gentlemen, through the medium of menstruation and its derangements a majority of the diseases of the generative organs of the female are first recognized. Hence the importance of occupying your attention with the nature and function of menstruation before proceeding to discuss its derangements.

Menstruation is a term used to designate a monthly discharge of blood from the uterus and vagina. This discharge is known by the names of the *catamenia*, *menses*, *les mois*, *les regles*, etc. The advent of this discharge is called *puberty*, which is that time in life when the female sexual apparatus, the ovaries, uterus, breasts, and external parts have arrived at maturity.

Before this period all were dormant, but now are brought into full development and capacity. Besides this wonderful physical development, there is a corresponding development of the moral and emotional faculties; and what was a few weeks before a playful, careless, childish girl, now becomes the cautious, perceptive, and thoughtful woman. This change is the result of the development and evolution of the Graafian vesicle or ova.

As puberty approaches the small rudimentary vesicles, deeply imbedded in the tissues of the ovaries, begin to enlarge and approach the surface; and as this development advances the tunics of the vesicle become thinner and thinner, until there is finally rupture and discharge of the ovule, which is grasped by the fimbriated extremity of the Fallopian tube and carried into the uterus. During the development of this ovarian vesicle, and a few days prior to menstruation, there is considerable turgescence of the generative organs, with the exhalation of a peculiar odor, and a slight mucous discharge; and by the final ripening and bursting of this vesicle the uterine mucous membrane becomes so congested that there is rupture of the small capillaries, and a discharge of blood. This discharge continues for three or four days, and gradually subsides, followed by a slight mucous discharge. It is this phenomena we call menstruation.

Menstrual blood, or the catamenia, is therefore simply arterial blood, com-

ing from the mucous membrane of the uterine cavity, and mixed on its way out with vaginal mucous. This admixture with the vaginal mucous prevents the discharge from coagulating, and accounts for its fluidity; if, however, there is an excessive flow of blood, more than can be mixed or incorporated with the vaginal mucous, or if retained awhile in the uterus, it will become clotted. In menorrhagia there is more blood than can be incorporated with the vaginal mucous, hence it becomes clotted. Pus as well as mucous mixed with blood causes it to retain the fluid form. In girls just commencing to menstruate, or in women in the decline of this epoch, as well as anæmic persons, the catamenia is often only a white and brownish color, the result of the discharge being composed principally of epithelial scales from the internal surface of the uterus and the mucous from the vagina.

The *quantity* of menstrual blood discharged at each period varies in different women, and sometimes in the same woman at different times. Of two healthy women one may loose twice as much blood as the other, and yet in both menstruation may be normal. Each woman is a law unto herself, or has her own standard of quantity. It is usually more copious in women of luxurious habits, and in hot than cold countries. There is, however, a medium quantity at each period, which is on the average about three or four ounces.

The *periodicity* at which menstruation occurs is usually every twenty-eight days. In women of good health this periodicity is generally maintained; however, there is in many considerable range of variation; in some it is less than that period, while in others the interval is longer. If there is much variation as to time in any individual case it is apt to be the result of disease.

Climate has the influence to hasten menstruation when it is continuously warm, and retard it when continuously cold.

The *age* at which menstruation first sets in is generally between thirteen and fourteen years. However there are many exceptions to this rule,—quite a number begin at ten or twelve, and in others it is retarded to the eighteenth or twentieth year, but all seemingly in the bounds of health.

Precocious menstruation sometimes occurs at quite an early age. I have known some as early as the third and fourth years, who continued to menstruate at regular monthly intervals thereafter, and enjoyed exceedingly good health. They were most all persons of the lymphatic temperament. Menstruation commences so very soon in some children that it may almost be said to be *congenital.*

Vicarious menstruation is a periodic discharge of blood from some other organ or part of the body than the mucous membrane of the uterus. When from some cause the course of the blood is diverted from the uterus, or the flow is checked, the excess of blood accumulating in the system must have escape, and being arrested at the uterus seeks some other outlet. This escape of blood is generally through the mucous membranes in some situation, most frequently in the nose.

Epistaxis is very frequent in girls at the age of puberty, which acts as a safety-value for the escape of the excess of blood in the system until menstruation is well established. Different parts of the mucous membrane of the alimentary canal may become the seat of vicarious menstruation. The *stomach* is the most frequent seat in this tract, often resulting in profuse hematemesis. This occurs sometimes as the result of pregnancy. When the uterine mucous membrane is barred against hemmorrhage by the formation of the desidua, the stomach becoming irritable, the redundancy of the circulation is called to it and escapes through the mucous membrane, and is ejected by vomiting. Hematemesis often occurs with imperfect or suppressed menstruation.

The *rectum and hemorrhoidal tumors* are not unfrequently the seat of vicarious menstruation. The *conjunctiva* may become, also, the seat of vicarious menstruation ; and in some instances after suppressed menstruation retinal hemorrhage will occur. The *skin* is occasionally the seat of vicarious menstruation, which oozes from the surface like a blood-sweat, or appears in the form of petechia or ecchymosis on various parts of the body. In this connection may be enumerated also the cases of vicarious menstruation occasionally occurring from the lumps of erythema nodosum, varicose ulcers, or other sores, and from the breasts.

Hæmoptesis, or hemorrhage from the mucous membrane of the lungs, is one of the most alarming forms of vicarious menstruation, as persons are generally led to believe it is the result of tubercular disease. And indeed if long continued it may lead to serious lung trouble.

Suspended menstruation occurs physiologically as the result of pregnancy and lactation. From the time pregnancy occurs menstruation ceases, and does not return until after the child is weaned, is the general law, to which, however, there are many exceptions. In the first months of pregnancy menstruation may take place from the cervical cavity, especially if there is congestion, inflammation, ulceration, or abrasion of the os or cervix. It is possible, also, at this early period for menstrual blood to escape from decidua vera or decidua reflexa lining the inferior zone of the uterus. In these cases there is more or less danger of abortion.

Menstruation during lactation is quite frequent, sometimes from the commencement, but often after four or six months. In the majority of cases it is suspended during the first nine or twelve months, and in some for twice that period if the child continues to nurse. So great is the influence of the breasts over the ovaries in these cases, as long as nourishment is being supplied to the child, the breasts seem to be in the ascendency, hence keep menstruation suspended. In such cases, from the same influence, impregnation is not so apt to take place. In other women, on the contrary, the mere act of applying the child to the breast will provoke irritation of the ovaries and cause a discharge of blood from the uterus.

The period of cessation of menstruation is uncertain, but usually occurs about the age of forty-five. This will depend upon the vigor of the ovarian function ; if it be very active and capacious in the development of germs menstruation commences earlier in life, and is apt to continue beyond the usual time of cessation ; while, on the other hand, if there is feeble development and small energy of those organs, menstruation is apt to commence late in life, and stop short of forty. Taking this view of the subject we must abandon the popular opinion that if a woman commences to menstruate early in life it will cease early, or if she commence late menstruation will continue much later than the usual age. Any disease of the general system producing long continued debility or depression of the powers of life, as well as various local disorders, or atrophy of the ovaries, will tend to shorten the period of menstrual life.

The attending symptoms or phenomena of menstruation are various ; some women having only slight langour of the general system and fullness about the genital organs ; while others will suffer excruciating pelvic pain, attended with high fever, headache, and sometimes convulsions. The pain in many is confined to the first few hours of menstrution, in others it will continue throughout the entire period. Just preceding and during the menstrual epoch there is more or less congestion or hyperemia of the genital organs. The ovaries become turgid with blood, and often the seat of tenderness and pain at the time of the bursting of the Graafian vesicle. The uterus becomes sensibly enlarged and tender to the touch, and the mu-

cous membrane so engorged that blood actually oozes from its surface. The vagina, also, participates in this congested condition. The breasts sympathize perceptibly, they swell, become hard and often painful. It is this ovarian stimulus that causes them to assume their full development. The skin, also, is affected during this epoch by the increase of pigmentation, which causes it to become dull and sallow, and especially around the eyes of brunettes quite dark or black. Women of good health and perfect condition of the organs of generation should pass through this period with nothing more than a slight sense of fullness in the pelvis, and perhaps some general lassitude, followed by the flow that gives complete relief. Unfortunately in a large number of cases the function is performed with difficulty, causing disturbance to the general system. This may be the result of local or mechanical obstruction, or from an excessively impressible nervous temperament, or a combination of both. Among the symptoms complained of are a draging sensation, and heat, or pain in the pelvic organs; and sometimes the pain is very acute in one iliac region and extends down the thigh. The nervous symptoms or irritation may extend to the alimentary canal, and vomiting and diarrhea be excited; or again, may extend to the heart, causing palpitation or syncope.

Besides these physical disturbances there may be alarming mental phenomena produced during menstruation, such as irritability of temper, distorted perception and judgment, despondency and melancholy, ungovernable impulses and excitement to the point of mania. Again it may evoke an attack of hysteric convulsions. In some of the cases that suffer so intensely at each epoch no local disease of the menstrual organs can be detected, and, except during the period, the general health is good; but in many there is local disease or obstruction to the free escape of the menstrual fluid, which can be ascertained and removed by appropriate treatment. It is in such cases that there is more or less trouble during the interval.

Gentlemen, the function of menstruation is not always performed with uniformity, it is easily disturbed by both physical and moral causes, hence it is important for us to inquire into the conditions of disturbed or *deranged menstruation.*

Menstruation is diminished or altogether arrested in some diseases, while in others it may become inordinate or too frequent. Menstruation may be instrumental in evoking certain diseases or morbid influences. Dr. Clapton has embodied the results of an extended observation upon this subject. He says phthisis in nearly every case stops menstruation; in the majority, abruptly, but sometimes after gradual diminution Not uncommonly phthisis appears to be developed in consequence of emansio mensium, but in almost all these instances there is evidence of scrofulous diathesis. In scrofula there is great irregularity as to time, quantity and character. As a rule there is delay, deficiency, or suppression. In bronchocele menstruation is generally scanty and pale. In neuralgia it, as a rule, diminishes. Neuralgia is often associated, either as cause or effect, with dysmenorrhea. Malarious affections diminish the secretion, and the color is pale. Chorea is not common after puberty, except in pregnant women; but when it does occur it is generally associated with either dysmenorrhea or emansio mensium. The influence of epilepsy is uncertain; menstruation is generally regular, but if not, there is tendency to excess or too frequent flow. Hysteria is sometimes cause, sometimes effect, of amenorrhea; it is usually associated with dysmenorrhea; more rarely with menorrhagia. Inflammatory and congestive disease of the brain and spinal cord tend to increase the menstrual flow; the degenerative tend to diminish it. Paraplegia, if from hyperemia, increases; if from anemia, decreases the

flow. Mania generally increases the discharge; melancholy diminishes it; dementia usually occurs after cessation of the catamenia. In idiocy, in the majority of cases, menstruation is irregularly performed, in some there is emansio mensium. Surgical injuries, attended by shock or concussion, generally check menstruation if occurring during the flow, but tend to increase it, if occurring during the intervals. Pyemia at once suppresses the discharge. In secondary syphilitic affections there is no alteration, unless the mucous membrane is affected, then there is apt to be hemorrhage. Purpura disposes to uterine hemorrhage. Typhus and enteric fevers, and exanthema retard, and sometimes suppress for a long time after the attack. In some of the worst cases there is uterine hemorrhage at the time. Rheumatism and gout have little apparent effect, except that in rheumatic fever menstruation is generally delayed. After one attack of acute rheumatism, menstruation is generally suppressed for a month or two. Congestive liver disease often for a time increases, while the atropic diseases diminish or suppress it. Chronic diarrhea or dysentery tends to diminish or suppress it. Of kidney diseases, the inflammatory or congestive generally increase menstruation, while the fatty and amyloid diminish or stop it. Diabetis diminishes, and, after a time, stops the flow, but in some cases there is no change. Heart diseases, distension of the right cavities, and affections of the mitral valves tend to increase, while aortic diseases generally diminish or stop menstrual flow. In emphysema and asthma, as a rule, there is no change; if any there is dysmenorrhea. Some diseases seem to be induced by and at the menstrual period only; as acnea, and nervous erethism or hyperesthesia, and which subside at the close of menstruation. Melancholia is a frequent attendant, and sometimes mania is produced by menstruation.

Gentlemen, the climacteric period or menopause should next be considered. There is no uniform age for the cessation of menstruation, or, as it is commonly termed, the "change of life." It generally occurs between the ages of forty and forty-five, sometimes as early as thirty; in others continuing to the fiftieth or sixtieth year, and in exceptional cases much longer. The *transition period* is in some well marked and abrupt, while in others it is interrupted by occasional suppressions, or changes in reference to time or quantity, and in others by positive diseases seeming to have their origin in this "change."

It is not to be wondered at that disease may result, after about thirty years of activity of the menstrual organs, when the periodical congestions and determinations of nerve-force is suddenly called on to find other outlets. Sometimes not only local but constitutional disorders are numerous and severe, the result of this change. Menorrhagia is often a frequent and alarming difficulty, or it may be substituted by vicarious discharges, as epistaxis, hemoptysis, leuchorrhea or hemorrhoides. In some cases the nervous system is affected with either headache, vertigo, epilepsy, apoplexy, or pain in different parts of the body. The headache is often distressing and peculiar, chiefly occipital and extending to the spinal cord. The moral, emotional, and intellectual faculties are deranged; despondency, fretfulness, irritability, forgetfulness, and indicision will arise. Nervous derangement of the intestines occur in some cases of the menopause, and severe spasms of the bowels follow; or there may be obstinate constipation or flatulency. This irritation of the bowels is so great and peculiar, causing so much abdominal distension, that the sufferer is often led to believe she is pregnant. This is somewhat confirmed by other conditions that occur during this period; such as enlargement of the breasts and abdomen from fat, movement of wind in the bowels from flatulency, similating the move-

ments of the child in utero, the cessation of menstruation, the headaches and occasional nausea, all add to the delusion. The nature of the derangement is easily distinguished by the small size of the unimpregnated uterus, the absence of the sounds of the fœtal heart, and the resonance on percussion. The distention will subside if chloroform be given by inhalation. Some cases are characterized by syncope, and for some time there is complete loss of consciousness. This condition may be accounted for by a feeble heart's action, the result of this organ being loaded with fat deposit, or dilatation. The irregular blood supply and sudden aberrations of nerve force so characteristic of "the change" results in sudden numbness, coldness, or tingling in the arm or leg; or alternate flushings in the face, chills, and partial hemiplegia. Gall stones are apt to be developed at this period, the result of a sluggish liver and gorged state of the portal system. Lithiasis is often a troublesome difficulty; giving rise to attacks of excruciating agony on account of the urine being loaded with lithiates, phosphates, albumen, and biliary matter.

The *course, duration and termination* of the disorders arising during the climateric epoch are variable. Some passing off in a few months, others continuing many years, some resulting in organic disease, and others in acute disease and rapidly terminate fatally. Where the troubles have been well marked they rarely disappear entirely in less than two or three years time.

Treatment.—In the treatment of the disorders of the menopause we must endeavor to simulate nature in periodic depletory measures, and thus relieve the vascular system of its fullness and tention. For this purpose saline cathartics are very efficient; yet where the liver is very sluggish, it is better to give rhubarb, podophyllin, blue pill, colocynth or aloes. If persons are plethoric with florid complexion and tendency to convulsions, moderate venesection should be resorted to for several monthly epochs; gradually increasing the interval until it can be discontinued. By following out this too much neglected therapeutic agent much suffering will be spared, organic disease prevented, and often life itself prolonged. An occasional cupping or leeching, by taking off the tension of the vascular system, frees the central organs of gorged blood, and prevents stagnation and disease. Bromide of potassium and hydrate of chloral are very efficient agents in controlling many of the nervous derangements mentioned. The circulation must be watched; the heart's action may be required to be controlled by digitalis; or if too feeble toned with quinine, iron or the mineral acids.

Attention to the diet and the regular action of the bowels is demanded, as troublesome indigestion is apt to occur at this period. Warm bathing by increasing the action of the skin, and the elimination of the effete products of the blood, assists in preventing internal congestions.

Gentlemen,—there are *senile menstrual disorders*, which you will frequently encounter. Senile disorders of menstruation are those derangements that arise in the generative organs after the function of generation has ceased to exist. Notwithstanding the generative function of women has ceased to exist, and the uterus and ovaries become shrunken and atrophied, yet disease may arise in these organs in advanced life. The mucous membrane of the vagina becomes pale and inelastic, and the upper portion or roof contracted and narrow; or, in some, relaxed, and the fat absorbed by emaciation, and the uterus, thus losing its ordinary supports, becomes prolapsed almost beyond remedy. The atrophy of the uterus occasionally involves the obliteration of its cavity or atresia at the os internum or externum. There is considerable secretion of mucous by the endo-metrium; or this mucous membrane may be affected with catarrh, or a continuation of some

former chonic disease; and the mucus thus secreted is retained, giving rise to uterine colic, and symptoms similar to retained menstruation. If this conditidn is not relieved severe nervous and inflammatory trouble will follow. The remedy in these cases is very clear; incision and dilatation of the closed os. If the secretion continues, astringents and alteratives should be applied to the uterine cavity.

Troublesome affections of the *skin*, especially eczema of the *vulva*, is often an exceedingly distressing and obstinate affection. *Pruritis* of the *vulva* also occurs independent of eczema. The *cause* of these affections is no doubt an unhealthy state of the blood; and a kind of plethora resulting from the lack of the former periodic purification by the menstrual flux.

The *treatment* of these conditions will require an occasional cathartic with alterative medicines. In obstinate cases arsenic in small doses will be very efficient. Locally washes of carbolic acid, or lime water, should be frequently applied, with some astringent ointment, as the oxide of zinc, borax, bismuth, or tannin incorporated with the extract of belladona. There are numerous *deranged states or morbid conditions of menstruation*, which are not diseases *per se*, but are dependent on different or various pathological lesions, and which so regularly recur with a uniform group of symptoms that they will be better understood when classified according to their prominent characteristics, and discussed separately. These *deranged menstrual states* are called *amenorrhea*, *menorrhagia*, *metrorrhagia* and *dysmenorrhea*. There are other conditions, also, which are, more or less, connected or associated with deranged menstruation, either as cause or effect, that may be very appropriately mentioned in this category. These conditions are *chlorosis*, *sterility*, leucorrhea, and hysteria. And I might add still other disorders growing out of the menstrual function. The menstrual derangement under which the patient before you (Case No. 1,) is suffering is *amenorrhea*. The term amenorrhea implies an absence of the menstrual flow in a woman in whom it should exist. Such an absence is a normal condition before puberty, after the menopause, or during pregnancy and lactation, and therefore must be excluded from the definition. Amenorrhea is an affection of *frequent* occurrence in women of careless habits, and those that lead an indolent and luxurious life. There are two *varieties* of amenorrhea; emansio mensium, where the discharge has never appeared in a woman who ought to menstruate regularly; and suppressio mensium, where the discharge has never appeared in a woman who ought to menstruate regularly; and suppressio-mensium, where the discharge is suddenly checked.

In regard to the *pathology* of amenorrhea it is now regarded as a settled fact that the discharge of blood occurring at monthly periods is a true hemorrhage, depending upon ovulation. Once in every twenty-eight days one or more ovule in each ovary burst their envelopes and pass through the Fallopian tubes into the uterus, and during this process, through the instrumentality of the ganglionic system of nerves, the whole uterus becomes congested, and the mucous membrane so turgid that rupture of the small capillaries occurs, and relief is obtained through hemorrhage. If therefore ovulation is absent amenorrhea will exist.

The *causes* of *amenorrhea* may be discussed under three classes. The *first* embracing abnormal states of the generative organs; such conditions as absence of the uterus or ovaries, rudimentary ovaries, occlusion of the uterus or vagina, metritis or endometritis, superinvolution, pelvic peritonitis, and atrophy or cystic degeneration of both ovaries. The *second* from abnormal blood states, as in phthisis, cirrhosis, Bright's disease, plethora, chlorosis, anemia, etc. The *third* class of causes is where the ganglionic nervous system is in a state of atony from constitutional disease, from mental depression, and from want of fresh air and exercise.

The differentiation of this condition must be carefully made from tardy menstruation, the menopause and pregnancy. It must be remembered that with some menstruation does not occur until the ages of eighteen or twenty years; and in those cases there is no periodical attacks of sicknes or any thing to indicate obstruction of this function. The period of the menopause may vary and occur much earlier in some cases; in such cases, when there is no evidence of general or local disease, it may be considered a normal condition and not amenorrhea. Pregnancy will be readily recognized by its characteristic signs, and especially by physical examination after the third month.

TREATMENT.—As amenorrhea results from so great a variety of causes, it is necessary before treatment is commenced to ascertain the nature and tendency of the cause, and the pathological lesion already produced. If the absence of menstruation is the result of plethora, abstraction of blood from the arm at intervals of a month between the menstrual epochs, with saline laxatives and an abstemious diet will generally have the desired result. In many cases, however, the venesection will not be required. In cases resulting from chlorosis and anemia, ferruginous preparations and nervous tonics will be required, with good rich food, change of air and moderate exercise. In grave constitutional conditions like Bright's disease, or phthisis, the main disease should be treated, as it is the impoverished condition of the blood that results in the absence of the menstrual flow.

Where amenorrhea exists the result of an atonic state of the nervous system, such remedies should be resorted to as would act directly upon the nervous system arousing nervous action. For this purpose electricity may be resorted to by applying one pole of the battery over the lower portion of the spine, and the other over the hypogastrium, or placed in contact with the cervix, or passed within, to the fundus of the uterus. Dry cupping often produces a beneficial hyperemia; this can be easily accomplished by incasing the cervix within the mouth of the cylinder of hard rubber, and then exhaust the air by withdrawing the piston. If these measures fail, the passage of the uterine sound, or tents of sponge or seatangle may be resorted to every five or six days, except during the time of the menstrual molimen. Warm hip baths and pediluva prolonged and as warm as the patient can bear them, with copious injections of warm water projecting against the os uteri by means of a Davidson's or fountain syringe, frequently restored to, will by exciting a rush of blood to these parts do much towards restoring the menstrual flow.

Amenorrhea the result of absence of the uterus is such a rare condition that but little can be said in reference to treatment, only if there should be any very urgent symptoms attending each epoch they may be relieved by the abstraction of blood from the arm. Where occlusion of the vagina or cervix is the cause, we must resort to the knife, scissors or trochar, or such surgical measures as each individual case indicates. If amenorrhea results from endometritis or peritonitis these diseases must be treated, and when cured menstruation will return. When the trouble exists from superinvolution, atrophied or rudimentary condition of the uterus, it should be developed by local stimulation and distension. Every five or ten days the uterus should be distended by a tent, or an intra-uterine galvanic pessary may be worn for the purpose of exciting the nutrition, and thereby increase the volume and capacity of the organ, and finally lead to the restoration of its function.]

Gentlemen—In the patient before you I have ascertained, by vaginal examination, that there is no pregnancy or obstruction in the organs to a ree escape of the menstrual fluid. The amenorrhea in the case results, no

doubt, from anemia and debility caused by the impoverished condition of the blood from tubercular deposit in the lungs. The prolapsus of the uterus may also occur from the same cause, and from this dislocation of the organ may come irritation and friction of cervix, and finally ulceration.

The *treatment* in this case plainly should be a tonic, stimulating and sustaining course. Hence we advise the administration of quinine, iron, codliver oil, the hypophosphites, a moderate amount of alcoholic stimulants, and a nutritious diet. For the local trouble we will advise the ulcerated os and cervix to be touched once a week with the stick of nitrate of silver, and when the granulations have healed to replace the uterus and retain it in its normal situation by a well fitting Hodge pessary.

Gentlemen, we will next consider Case No. 2, which is one of profuse menstruation, or menorrhagia. By *menorrhagia* is meant a profuse and excessive flow of blood at the menstrual periods; while *metrorrhagia* denotes a more or less continual flow of blood, whether profuse or not, during the intervals of menstruation. These conditions are *frequent* as they are both symptomatic of a large number of pathological lesions of the uterus.

Of the *pathology* there are two conditions that may give rise to this hemorrhage: the *first* is from anything inducing a state of active or passive congestion of the mucous membrane or parenchyma of the uterus; the *second* is from any growth, which, having a vascular connection with the uterus, allows a flow of blood from its own surface.

The *causes* most frequently producing either one or both these forms of hemorrhage are congestion, polypus, ulceration, fibrous tumors, cancer, retained products of conception, fungus degeneration of the uterine mucous membrane, inversion of the uterus, hematocele, and subinvolution.

Congestion of the uterus with troublesome hemorrhage frequently follows abortions; it is very common also at the period of the menopause, and may result from various conditions of the uterus where its circulation is impeded, or position interfered with. If the products of conception are retained the envelope may become a mole; or the chorion may undergo degeneration, and uterine hydatids form; or the placenta may remain unaltered, and thus collecting in the uterus cause hemorrhage.

Fungus degeneration of the lining membrane of the uterus, the result of chronic inflammation, is not an unfrequent cause of both menorrhagia and metrorrhagia. Dr. J. Henry Bennet thinks that the troublesome hemorrhagia which often occurs after parturition, both before and after menstruation, is nearly always occasioned by inflammatory ulceration of the neck of the uterus, with or without disease of the body of that organ.

The *differentiation* is often difficult and even impossible to determine without physical exploration; and sometimes resort to the speculum, probe, and tent will be required. By these means it is possible to ascertain the seat of the lesion that causes the hemorrhage; unless it is the result of "change of life," or primary idiopathic congestion.

The *prognosis* will depend upon the cause of the hemorrhage, and whether the affection is curable or not.

The *results* of this trouble, if not speedily controlled, will be anemia, hysteria, sterility, and finally, in extreme cases, emaciation and death.

TREATMENT.—When first called to see a case of uterine hemorrhage it is important to promptly arrest the further loss of blood by such means as are generally efficient for that purpose, before we can ascertain the real cause of the affection. Therefore treatment will resolve itself into palliative and curative. *Palliative* treatment consists in keeping the patient on her back with the hips elevated, cold water compresses applied over the

lower part of the abdomen, vulva and thighs, the administration of cold acidulated drinks, quiet enjoined and conversation prohibited. At the same time such hemostatic medicines as sulphuric and gallic acid, opium, ergot, and cannibis indica should be given. If these measures fail, then we must resort to the tampon, simple or saturated with astringent substances, such as alum or persulphate of iron.

Before curative treatment is instituted it must be remembered that the hemorrhage is generally the result of local disease, and that this is the real element to be attacked and subdued. The local diseases which give rise to this condition, such as congestion, ulceration, fibroids, polypus, inversion, hematocele, and the retained products of conception, must be treated according to the indications in each individual case.

Where hemorrhage occurs at the beginning and termination of the menstrual function, or from trivial causes, but little treatment is required besides quietude, rest in the horizontal position, with cold acidulated drinks, and cold compresses applied over the lower part of the abdomen. Some women naturally flow so much at the menstrual epoch that the amount would be considered hemorrhagic in others. But it must be borne in mind that there is no general standard of quantity, and what is normal in one may be hemorrhagic in another. It depends upon whether the amount lost depletes the health, if not, treatment is uncalled for.

During the early months of pregnancy some women have a steady flow of blood, or metrorrhagia; in such cases this condition should be carefully ascertained before treatment is instituted, as the resort to the probe or employment of the tent would be hazardous. In cases of subinvolution, the free administration of ergot not only acts as palliative, but is a very efficient curative agent, especially when used by hypodermic injection in the uterus itself.

In treating of hemorrhage resulting from fungus degeneration of the mucous membrane of the uterus, sponge tents should be introduced fully into the uterine cavity and allowed to remain from twelve to twenty-four hours, with a view of causing atrophy of the morbid growth by pressure; they act doubly efficient when they contain some astringent. This should be repeated once a week, and after the withdrawal of each tent the whole uterine cavity painted with a solution of persulphate of iron, nitrate of silver or tincture of iodine diluted with one half of water. If this plan fails after being resorted to at intervals of a week, for a number of times, then resort may be had to the curette, and after full dilatation the whole mucous lining of the uterus scraped gently, but sufficiently to remove the excessive morbid growths, after which the treatment above recommended should be continued until a cure is effected.

In persons of the *hemorrhagic diathesis*, menorrhagia and metrorrhagia sometimes occurs and assumes threatening proportions. This condition will have to be treated more or less *empirically* until pathologists enlighten us as to the cause. In the mean time such a course should be pursued by the patient as will add tone and vigor to the system by moderate open air exercise, avoiding excitement and over-exertion. The diet should be plain and nutritious, and the bowels kept regular. Both vegetable and mineral astringents may be given for their well known hemostatic properties. The uterine canal should be dilated and painted with tincture of iodine, solutions of persulphate of iron, nitrate of silver, or tannin. If the uterus is enlarged ergot should be administered or used hypodermically.

Gentlemen, it is evident in the patient before you (Case 2) that the profuse long-continued menstruatian results from the ulceration of the os

and cervix, and the engorgement and dislocation of the utetus, that you have heard described as existing in the case, and as ascertained to exist by vaginal examination.

The *treatment* in this case must be both local and general. We will require the patient to keep much of the time in the horizontal posture during the menstrual epoch, and to avoid excitement or over-exertion both before and after this period. We will order twenty drops of tr. ferri. chl. three times a day for the purpose of restoring tone to the general system and as a hematic, thus supplying the exhausted blood. For the local trouble we will direct the patient, during the intervals of menstruation, to use daily copious vaginal injections of water containing some astringent; and the dispensary physician will apply once a week the solid stick of nitrate of silver to the ulcerated os and cervix. After a few weeks, when we hope to have cured the ulceration, we will replace the uterus and retain it in position by a pessary until the parts are restored to the normal condition.

Microscopy.

PROFESSOR HASERT'S NEW OBJECTIVE.

DENSTONE, UTTOXETER, October 3, 1875.

To the Editor of the 'Monthly Microscopical Journal.'

SIR,—Professor Hasert, of Eisenach, who, as the readers of this Journal will probably recollect, manufactured the lenses with which Dr. Schumann performed those truly wondrous feats recorded in his 'Diatomeen der hohen Tatra,' has been for a considerable time engaged in devising an altogether novel species of lens, which will, I expect, form an epoch in microscopy. The problem he proposed to himself was to construct an objective which should completely satisfy the conflicting requirements of scientific microscopists and of genuine 'Naturforscher,'—which should be so absolutely perfect in its correction as to dispense with screw-collar adjustment for different thicknesses of cover, so as to work through a wide range of covering glass without any perceptible deterioration of the optical image, and combine the utmost beauty of definition with a depth of penetration amply sufficient for all medical purposes, and, while giving a perfect resolution of all known tests, including even those terrible puzzlers *Stauroneis spicula** and *Amphipleura pellucida*, be capable of being worked up by deep eye-pieces to 3500 diameters without detriment to the definition.

In his correspondence he says: "I hope to bring my new lenses to such a point of perfection that they will not want any correction-screw for different thicknesses of glass cover. I tried a power of 2000 diameters on very fine organic objects with covering glass of 1-5 and 1-10 of a millimeter, side by side, without being able to find any difference in distinctness. I also tried *Grammatophora subtilissima* with cover of $\frac{1}{6}$ and 1-10 without perceiving any difference." * * "My old dry lenses

* A veteran microscopist of great skill as a manipulator, in his letter to me dated Sept. 27, 1875, says: "I have this morning succeeded in resolving *Stauroneis spicula* to my satisfaction. I have had a great deal of trouble with it. It is undoubtedly the very hardest object I ever had to deal with —*Amph. pellucida* not excepted. I could, however, do nothing with *St. spicula* by lamplight. I soon found morning was the only light that would enable me to deal with it; and I have now seen it resolved,—I may say 'brilliantly,' all over the *lorica*." Compare also Mr. Leifchild's letter in the 'M. M. J.,' vol. xiii. p. 174.

show longitudinal dotted lines on *Amphipleura pellucida*, and lateral of the same kind; and in very bright light the little corpusculi can be seen standing diagonally on the longitudinal lines, being of a rectangular form,† as you will find them on *P. balticum* and *P. attenuatum*. My *new immersion lenses* will resolve the object with ease even with direct light, as they will also show the little corpusculi on the lines of *Gram. subtilissima* and *S. gemma*." * * "It [the new pattern immersion lens] will, even with direct light, resolve *Frustulia Saxonica* and the REAL *Grammatophora subtilissima*, which has never been resolved by any instrument which I compared with mine, neither English, German, nor French, all of which I compared at various times. But my slide of *Grammatophora* (in Canada balsam) was *never* resolved by any glass of the best makers. You will also see the puncta of *Amphipleura pellucida* with direct light."

And in his recent catalogue, which appeared within the last three weeks, this new species of lens is thus described: "Objectives of newest construction, on the immersion system, requiring no correction-adjustment for different thicknesses of glass, which at a magnification of 2000 diameters, and on covering glass from 1-11 to $\frac{1}{4}$ of a millimeter, exhibit equal distinctness, and bear a magnification of 3500 diameters with clearness and sharpness, and show the dots on *Amphipleura pellucida*, *Surirella gemma* and *Grammatophora subtilissima* even without oblique illumination, but with oblique light, with great prominence, and the most delicate organic objects superbly." So much for the man's own account of the matter. I may now state what I have done with it myself. I tried it with respect to the several points of screw-collar, resolution, penetration, depth of eye-piece and definition, with the following results:

(1) *Screw-collar.*—So far as I have been able to examine it on this point,—and I tried it on covering glass ranging from .003 to .008,—the maker is fully justified in his statement. I found *no difference whatever.*

(2) *Resolution.*—It worked upwards, with comparative ease, through *S. gemma*, *P. macrum*, *Frustulia Saxonica*, and *Navicula crassinervis*, resolving them with great beauty and sharpness; but at *Stauroneis spicula* it STOPPED; aad no coaxing could draw it onwards. On this occasion I used a C. eye-piece with oblique light from an ordinary concave mirror. Next night, having substituted a peculiar arrangement of my Abraham's prism, and again using the C eye-piece, the resolution was absolutely perfect from end to end, and the object as colorless as water. In both cases I used a Bockett lamp. Its resolution, then, I must pronounce excellent.

(3) *Penetration.*—In this respect also it was perfectly satisfactory, showing layer after layer of tissue to a good depth; and I can only conceive its failure where the operator cuts his sections too thick.

(4) *Depth of Eye-piece.*—In this trial I had at command B and C eye-pieces by Baker, D by Powell and Lealand, and E and F. by Ross. The third of these I was soon obliged to discard, as it gave much inferior images to those presented by the E and F eye-pieces.

On *P. angulatum*, with E eye-piece, the resolution was only *moderately* good, and there was a certain amount of unmistakable "fuzziness," which was not pleasant On *S. gemma* with E and F eye-pieces, the result was simply nil, though it had but a minute before resolved this diatom beautifully with a C eye-piece.

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† Without professing to follow the learned Professor in his views of the markings of *Amph. pellucida*, I may mention that a a notable microscopist of my acquaintance sent him an especially difficult slide of that diatom with a request that he would resolve it, and received in a few days a pencil drawing of it, corresponding in all its details with the above description. This drawing I have seen.

In my own practice I should never think of using it with any higher eye-piece than C. I also came to the conclusion that there was ample room for improvement in our eye-pieces. It will be seen, then, that I have come far short of doing with it all that the maker promised it should do. This the reader may, if he likes, attribute to my want of manipulative skill. But there is something also in the fact that this glass,—confessedly one of a novel and singular cnnstruction,—had only been in my hands some thirty-six hours,—too short a time to enable one to become acquainted with all its little whims and peculiarities. For lenses too have their little whims as well as human beings; and these have to be studied, and *humoured*, if one is to succeed in making a lens do its very best.

(5) *Definition.—This* I conceive to be the distinctive feature and special excellence of Hasert's new system. Indeed, I seem to myself never to have known what the word definition really meant till I saw this glass, so beautifully clear, sharp, and distinct were all the details. I certainly never saw any objective that even approached it!

I may add that, throughout the whole trial it was matched with my 1-24th immersion, which is a glass of no mean capabilities.

On the other hand, this description of objective can never seriously compete with English manufacture, and for the three following reasons:

1. Its inordinately high price.
2. The strong prejudice in England against all objectives unprovided with correction-arrangement.
3. Its comparatively weak magnification.

I ought to have mentioned that, though nominally a 1-16 inch, it is really only a 1-10 inch; and that there is a great lack of neatness and finish in the brasswork.

Yours, faithfully,

W. J. Hickie.

Book Notices.

PHTHISIS:—Its Morbid Anatomy, Etiology, Symptomatics, Events and Complications, Fatality and Prognosis, Treatment and Physical Diagnosis. In a series of Clinical Studies. By AUSTIN FLINT, M. D., 8 vo. pp. 441 Philadelphia: HENRY C. LEA. Cincinnati: R. CLARKE & Co. 1875.

The distinguished author of this work, in the introduction, states that, "the purpose, in the pages which are to follow, is to give the results of clinical studies relating to phthisis." Of the cases of the disease which had come under his observation up to the time of entering on these studies, he has preserved notes of a considerable number, namely, six hundred and seventy. These cases were noted during a period of thirty-four years. Whether the abstracting, grouping, and analysis of them with reference to practical deductions has any value proportionate to the labor which it has cost he leaves for the reader to decide, but he trusts that the series of clinical studies which the volume embraces, will not be without interest and importance to the practitioner.

The following arrangements of topics has been adopted: *First*, the morbid anatomy of phthisis; *second*, the etiology; *third*, symptomatics, events and complications; *fourth*, fatality and prognosis; *fifth*, the treatment; and *sixth*, the physical signs and diagnosis

On page 272 of the work, under the head of "treatment," the author writes as follows: "It is undoubtedly true that, in the majority of cases,

phthisis treated in different ways, and without any active treatment, ends in death after a duration which varies within wide limits. The intrinsic tendency in these cases is to a fatal termination. Is this the tendency in all cases? Facts warrant a reply to this question in the negative. Recovery takes place in a certain proportion of cases. This was the termination in fourty-four cases in my collection. Now it will be seen that in a considerable proportion of these cases there was no medicinal treatment which can rationally be supposed to have had any special or controlling influence over the disease. The disease, therefore, in some instances, tends intrinsically to recovery. Moreover, as appears from facts developed in the preceding chapter, the disease ceases spontaneously in some cases when the lesions do not admit of complete recovery; and it is probable that the instances in which arrest and recovery take place would be more numerous were it not for certain complications, accidents, and intercurrent affections. That phthisis may end favorably, irrespective of any special medicinal treatment, is a truth which, if I mistake not, is not sufficiently appreciated. It is a truth of great importance in endeavoring to judge of the influence of therapeutical measures."

We commend the work to the attentive study of physicians. It is certainly highly worthy of it. We know that consumption of the lungs is not a disease that the prospects of curing are brilliant, but then many facts in regard to it have been noted, and these must be learned in order to progress in knowledge, and to attain to that degree which will enable us to class it among the curable affections. No one, we feel sure, will attentively read the work of Prof. Flint and not feel that he has been greatly instructed and better prepared to render assistance in this most fell of all diseases.

The Transactions of the American Medical Association. Instituted 1847. Volume xxvi.

This volume contains the minutes of the twenty-sixth annual meeting of the American Medical Association, held in the city of Louisville, Ky., May 4, 5, 6, and 7th of the present year. It is an 8vo. book of 574 pages. Besides containing a record of the proceedings, it has the papers read, the most of which are interesting and valuable.

No more important work is issued from the press than the volume of transactions of the Association. The permanent Secretary, Dr. William B. Atkinson, of Philadelphia, deserves much credit for the neat and accurate manner in which the annual volumes are published. The present one is fully up to those of the past which we have had occasion to commend.

Editorial.

End of Volume.—The present number of the Medical News completes the fourth volume of the new series, and the eighth volume of the old series. Since the beginning of the year 1868 the Journal has been regularly furnished to its subscribers—never once missing a month. It certainly now can be regarded as well established.

We expect promptly next month to issue the first number of the new volume. Those who design to continue with us the coming year as subscribers we hope will remit to us the price of subscription without delay. It is our plan to issue no greater number of copies of the Journal than is necessary to supply actual subscribers, and therefore to be sure of ob-

taining the volume complete all who desire to continue as subscribers should inform us of the fact as soon as possible.

There are the names of a few persons on our books who are ***delinquent.*** We must say to those that we cannot longer be sending the JOURNAL unless we are paid. We are sorry to say that the conduct of a number of physicians in reference to paying for their periodical medical literature is not of a kind to mark them as men of integrity. Anxious to be paid for their own services they seem to feel under no obligations to pay others for their services. Some, after once subscribing for a journal, will permit it to be sent to them nntil doomsday without either paying for it or directing it to be stopped. Such conduct is neither honest nor honorable. We request all who are indebted to us to remit without further delay.

AMERICAN CENTENNIAL CELEBRATION.—INTERNATIONAL MEDICAL CONGRESS.—The Medical Societies of Philadelphia, animated by a just spirit of patriotism, and an earnest desire to unite with their fellow-citizens in celebrating the Centennial Birthday of American Independence, have taken the initiary steps for the formation of an International Medical Congress, by the appointment of delegates from their respective bodies, who were empowered to organize and perfect a scheme for the above purpose. In accordance with the authority thus given, the delegation has organized the Centennial Medical Commission, with the following officers :

President—Samuel D. Gross, M. D., LL. D., D. C. L., Oxon.

Vice-Presidents—W. S. W. Ruschenberger, M. D., U. S. N., Alfred Stille, M. D.

Recording Secretary—William B. Atkinson, M. D.

American Corresponding Secretaries—Daniel G. Brinton, M. D., William Goodell, M. D.

Foreign Corresponding Secretaries—Richard J. Dunglison, M. D., R. M. Bertolet, M. D.

Treasurer—Caspar Wister, M. D.

Arrangements have been made for the holding of the Congress in the city of Philadelphia, to begin on the 4th and to terminate on the 9th of Septembet, 1876. The Commission propose the following general plan for the organization and business of the Congress :

I. The Congress shall consist of delegates, American and foreign, the former representing the American Medical Association and the State and Territorial Medical Societies of the Union ; the latter the principal medical societies of other countries.

II. The officers shall consist of a President, ten Vice-Presidents, four Secretaries, a Treasurer, and a Committee of Publication, to be elected by the Congress at its first session, on the report of a Committee of Nomination.

III. The morning sessions of the Congress shall be devoted to general business and the reading of discourses ; the afternoons to the meetings of the Sections, of which there shall be nine, viz.:

1. Medicine, includiug Pathology, Pathological Anatomy and Therapeutics.
2. Biology, including Anatomy, Histology, Physiology and Microscopy.
3. Surgery.
4. Dermatology and Syphilology.
5. Obstetrics and Diseases of Women and Children.
6. Chemistry, Toxicology and Medical Jurisprudence.
7. Sanitary Science, including Hygiene and Medical Statistics.
8. Ophthalmology and Otology.
9. Mental Diseases.

IV. The language of the Congress shall be the English, but not to the exclusion of any other language in which members may be able to express themselves more fluently.

Gentlemen intending to make communications upon scientific subjects will please notify the Commission at the earliest practicable date, in order that places may be assigned them on the programme.

In order to impart to the Congress a thoroughly international character, invitations to send delegates will be extended to all the prominent medical societies in Europe, Mexico, the British Dominions, Central and South America, the Sandwich Islands, the East and West Indies, Australia, China, and Japan. Invitations will also be tendered to medical gentlemen of high scientific position; and distinguished visitors may be admitted to membership by a vote of the Congress.

Among the advantages arising from such a convocation as this, not the least important will be the opportunity afforded its members for the interchange of friendly greetings, the formation of new acquaintances, and the renewal and comenting of old friendships.

The Centennial Medical Commission tender in advance to their brethren in all parts of the world a cordial welcome, and a generous hospitality during their sojourn in the "Centennial City."

The Congress will be formally opened at noon, on Monday, the fourth day of September, 1876.

The registration book will be open daily from Thursday, Aug. 31, from 12 to 3 P. M., in the hall of the College of Physicians, N. E. corner 13th and Locust Streets. Credentials must in every case be presented.

Gentlemen attending the Congress can have their correspondence directed to the care of the College of Physicians of Philadelphia, N. E. cor. of Locust and Thirteenth Sts., Philadelphia, Pennsylvania.

There is every reason to believe that there will be ample hotel accommodation for all strangers visiting Philadelphia in 1876. Further information may be obtained by addressing the Corresponding Secretaries.

All communications must be addressed to the appropriate Secretaries.

William B. Atkinson, 1400 Pine Street, Philadelphia, *Recording Secretary.*

Daniel G. Brinton, 2027 Arch Street, William Goodell, Twentieth and Hamilton Sts., *American Corresponding Secretaries.*

Richard J. Dunglison, 814 N. Sixteenth Street, R. M. Bertolet, 113 S. Broad Street, *Foreign Corresponding Secretaries.*

PHILADELPHIA, October, 1875.

A MEDICAL NIGHT SERVICE.—Paris will probably soon have a medical night-service, from which possibly we in this country may take a hint, and such as we have already described as existing at St. Petersburg. The Prefet de Police, in his memorandum on the Budget of 1876, expresses himself thus:

"*Public Succor.*—We arrive at a question often discussed; that of medical succor to persons attacked during the night by sudden accidents or ailments. The cases in which the absence of this help has been fatal to sick persons are happily rare; but one painful occurrence (often, moreover, exaggerated) suffices to give rise to recriminations against the medical body, which, however, taken as a whole, holds cheaply enough its repose, its health, and, yet more so, its interests. The strength of medical men is not without limits, and their fatiguing and perilous Profession makes repose at certain hours an imperious necessity for them. On the other hand exag-

gerated disquietudes of patients and their families often lead to useless summonses. Finally, more than once, under pretext of an urgent visit, physicians have been led into ambushes, not to speak of ungrateful and dishonest clients, who refuse the legitimate remuneration due to the service rendered."

To remove these inconveniences for the benefit of the public, the Prefect of Police recommends the following arrangements, which will necessitate the inscription on the budget of the city of a sum of only 10,000 francs ($400). In every quarter, medical men will be invited to declare whether they are disposed to attend to requisitions addressed to them in the night. The names and domiciles of those who may be willing will be inscribed on an official list posted in the police-stations of the quarter. The person who may require a doctor will go to the neighboring police-station, and will select from the list the practitioner whose aid he desires. A police-officer from the station will accompany him to the house of the medical man, will follow the latter to the house of the patient, and will, when the visit is over, reconduct him home. On leaving him he will give him an order on the police treasury for ten francs. According to the pecuniary position of the patient, the administration will reclaim the fees paid, or will assume the cost of them.—*Brit. Med. Jour.*

HINTS IN THE OBSTETRIC PROCEDURE.—Just as we are closing up the last form of the present number of the MEDICAL NEWS, we have received the little work with the above title by Dr. Wm. B. Atkinson, of Philadelphia. These "Hints" form the subject matter of the *Annual Address* of the author before the Philadelphia County Medical Society. The cordial reception accorded it by the profession and the medical journals, and an almost constant demand for it from all parts of the country, has induced the author to re-write it, and present it in its present form.

In a previous number we made large extracts from this address, and our readers were able to see that it contained very valuable directions to the accoucheur. We have no doubt it will receive quite a welcome in the form of a little book. The author makes no attempt to offer a complete *vade mecum*, but only desires "to present as clearly and compendiously as possible, his views in certain matters connected with the obstetric art, with a hope that he may thus contribute to a better performance of this art, and that, while he is aiding his fellow practitioners, he may divest this branch of much of its mystery and dread—a dread too often shared alike by the physician and patient."

THE WEST VIRGINIA MEDICAL STUDENT.—We have received the first number of this new monthly. It is published at Wheeling, and is edited by Dr. James E. Reeves. It has a number of excellent communications by different writers. It is printed on fine tinted paper and presents a very neat appearance. We wish it success.

SUICIDES IN VIENNA.—During the month of August of this year, thirty-three persons (among them eight women) committed suicide. Nine (two females) hanged themselves; eight (one female) shot themselves; five (two females) drowned in the Danube; and the same number cast themselves from considerable heights; four (one woman) took poison; one man cut his throat, and one stabbed himself. The oldest suicide was eighty-one and the youngest fourteen years of age.

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